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Number 3.

DECEMBER, 1904.

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$3.00 with Directory.

# TEXTILE WORLD RECORD

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LORD & NAGLE COMPANY · Boston & Philadelphia

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The Annual Report of New Mill Construction for 1904 is Contained in This Number.

# The Textile-Finishing Machinery Co.

**17 EXCHANGE PLACE, PROVIDENCE, R. I.**

Mercerizing Machinery for Piece Goods and Yarn in the warp or chain

Singeing Machines,

Boiling Kiers,

Washers, Squeezers,

Chemic and Sour

Rusden Patent

Continuous Chainless

Steamer,

Aniline Agers,

Dyeing Machines,

Open Soapers,

Blanket Washers,

Color Kettles,

Horizontal or Vertical Drying Machines, with Copper or Tinned Iron Cylinders,

Automatic Tentering Machines,

Water and Starch Mangles,

Dampening Machines,

Dyeing Machines for Chain Warps.

**BUILDERS OF ALL KINDS OF**

**MACHINERY**

**FOR**

**BLEACHING**

**DYEING**

**DRYING**

**AND**

**FINISHING**

Calenders for Rolling, Glazing, Chasing and Embossing, also Calenders for Moire Finish.

Patent Combination Rolls made of Cotton and Husk especially adapted for Soft Finish, Unequalled for Elasticity and Durability.

Cotton, Paper, Husk, Chilled Iron, Brass and Rubber Rolls, Electro-deposited Copper Rolls for all Purposes.

Padding and Drying Machines for Shade Cloths.

Single and Double Cylinder Engines.

Hydraulic Presses and Pumps.

ALL KINDS OF OUTFITS FOR BLEACHING THREAD AND SOFT TWISTED YARN.
BLEACHING MACHINERY FOR YARNS IN THE WARP OR CHAIN.

**Estimates, drawings and full particulars of complete plants furnished on application**

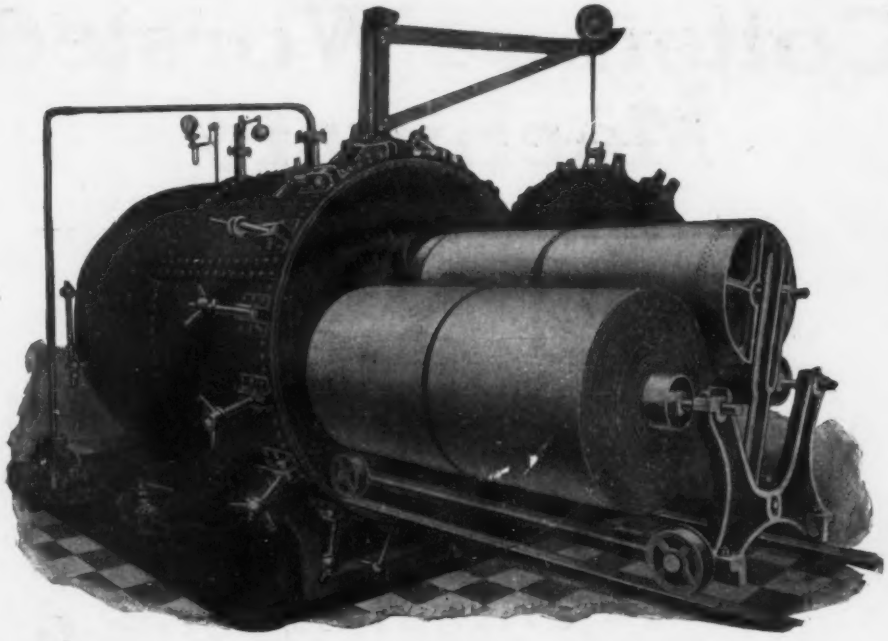
Southern Agent, STUART W. CRAMER, Trust Bldg., Charlotte, N. C., Equitable Bldg., Atlanta, Ga.

# Open Bleaching System

OF

## JACKSON & HUNT

Patented in the United States, Great Britain and the Continent
U. S. Patent, January 15th, 1901. No. 666,056



## H. W. Butterworth & Sons Co.

Manufacturers of

## Bleaching, Dyeing, Drying and Finishing Machinery

YORK AND CEDAR STREETS

PHILADELPHIA

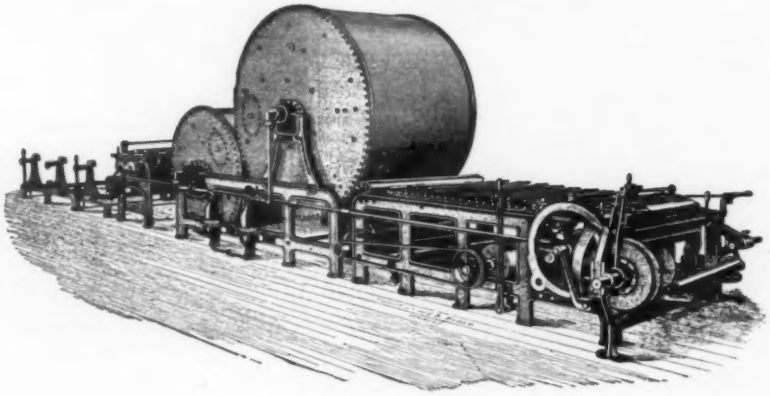
Sole Makers for the United States

# Lowell Machine Shop

**LOWELL, MASS.**

# Cotton and Worsted Machinery

With modifications to suit any class of work.



CYLINDER SLASHER.

**COTTON MACHINERY**—Cards, Railway Heads, Drawing Frames, Roving Frames, Ring Frames, Spoolers. Warpers, Slashers, Looms, Twisters, Reels, Shearing Machines, Brushing Machines, Folders, Cloth Stamping Machines, Baling Presses, Size Kettles, etc.

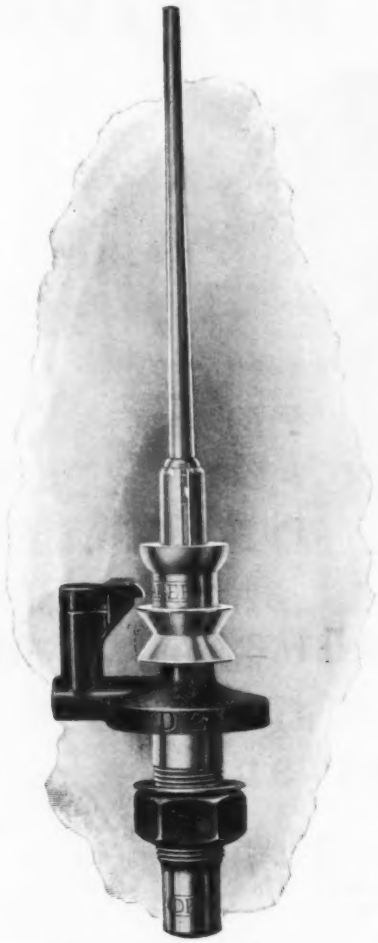
**WORSTED MACHINERY**—Spinning Frames, Twisters, Dandy Rovers and Reducers, Gill Boxes, etc.

*Plans, Specifications and Estimates furnished upon application.*

Southern Representative

**John Hill, Prudential Bldg., Atlanta, Ga.**

# A New Spindle Improvement



The Rabbeth Centrifugal Bobbin Clutch.

Fits the Bobbin loosely when at rest—allows considerable variation in fit.

Bobbins will all go down into place and Traverse can be lengthened.

Allows easier and quicker doffing — stronger bobbins — less reaming.

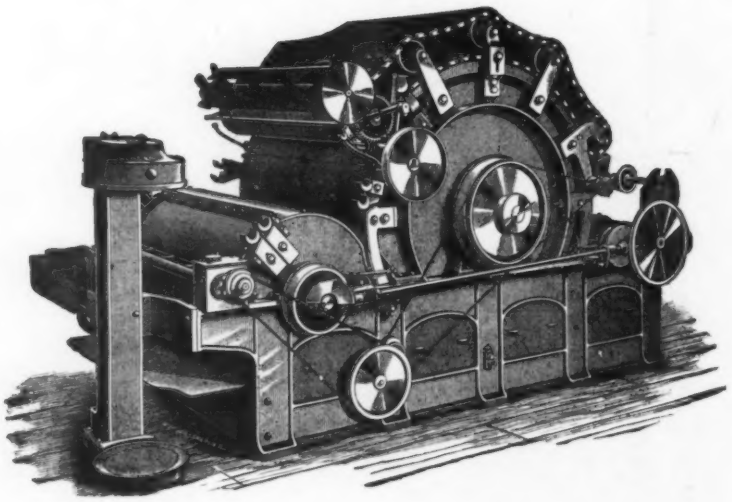
**Draper Company, Hopedale, Mass.**

We Also Build Looms.

# MASON MACHINE WORKS,

**TAUNTON, MASS.**

# Cotton Machinery



Cards, Combers, Railway Heads,
Drawing Frames, Spinning
Frames, Mules and
Looms,

INCLUDING

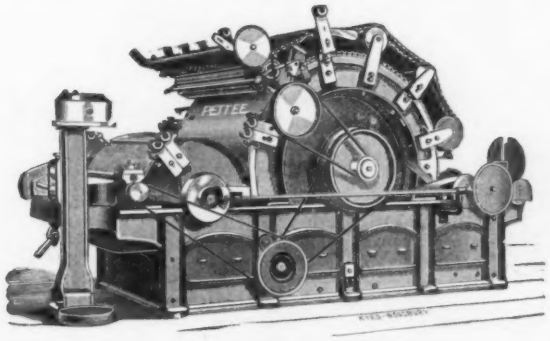
## Plain and Fancy Silk Looms

**Southern Office, Charlotte, S. C.**

# Saco and Pettee Machine Shops

NEWTON UPPER FALLS, MASS., U. S. A.

# COTTON MACHINERY




PICKERS,
REVOLVING FLAT CARDS,
DRAWING FRAMES,
RAILWAY HEADS,

SLUBBING,
INTERMEDIATE AND ROVING FRAMES,
SPINNING FRAMES,

SPOOLERS AND REELS.

**Shops:** { **Biddeford, Me.**
**Newton Upper Falls, Mass.**

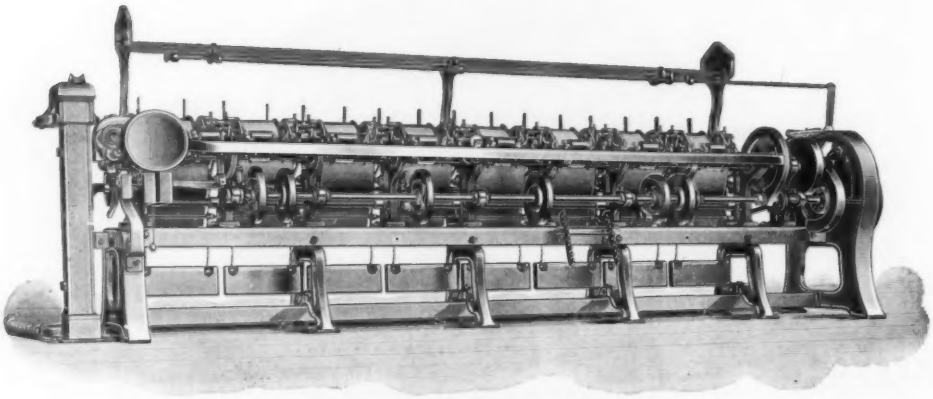
Southern Agent, A. H. WASHBURN, Charlotte, N. C.

THE

# WHITIN MACHINE WORKS,

# Cotton Machinery

**WHITINSVILLE, MASS.**



The Whitin 8 Head Comber.

**Southern Agent, . . . S. W. CRAMER**

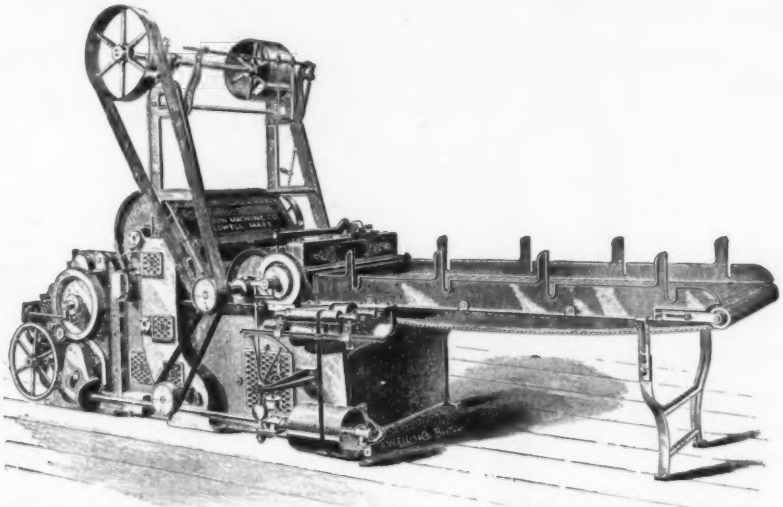
**Trust Building, CHARLOTTE, N. C.**
**and Equitable Bldg, ATLANTA, GA.**

Revolving Flat Carding Engines,
Sliver Lap Machines,
Ribbon Lap Machines,
Combers,
Railway Heads,
Drawing Frames,

Spinning Frames,
Spoolers,
Twisters,
Reels,
Looms,
Long Chain Quilling Machines.

# The Best Pickers

In the Cotton Field nothing equals the DARKY COTTON PICKERS.



In the Cotton Mill nothing equals the KITSON COTTON PICKERS.

KITSON MACHINE CO., LOWELL, MASS.

LARGEST BUILDERS OF COTTON OPENERS AND LAPPERS IN THE WORLD.

STUART W. CRAMER, Southern Agt., Charlotte, N. C. and Equitable Bldg., Atlanta, Ga.

# SCOTT & WILLIAMS

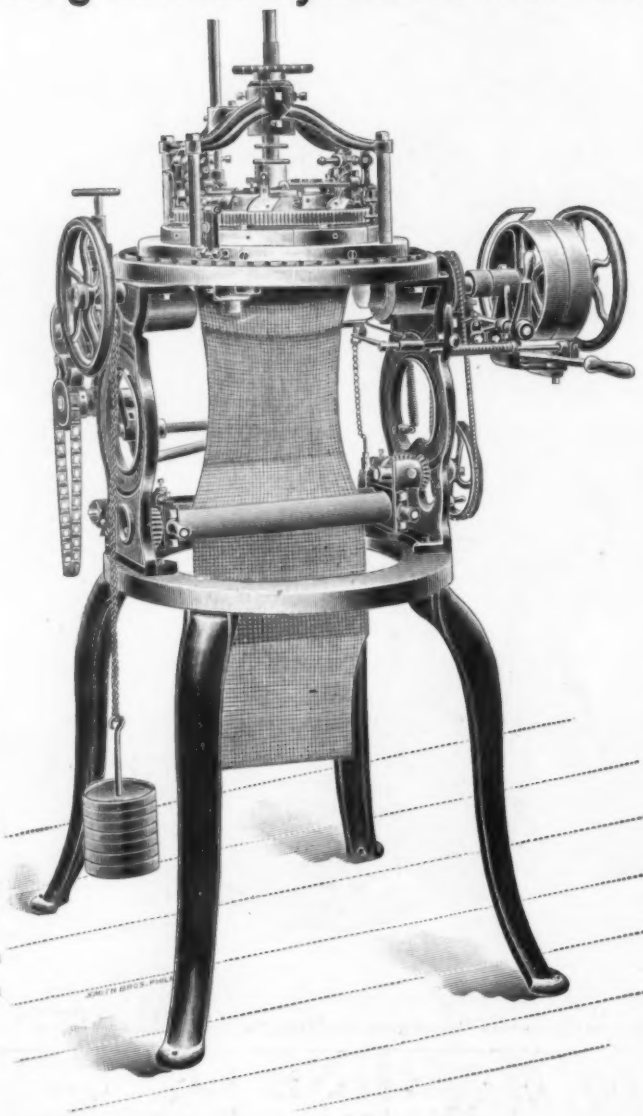
BUILDERS OF

## Rib Knitting Machinery for Underwear and Hosiery

The illustration shows our

**Improved High Speed Single Lever Automatic Ribbed Underwear Machine**

for making ladies' and gents' ribbed underwear, union suits, etc., plain and shaped.



Plain, Single Lever or with Welt, Slack Course and Automatic Slackening Device for Welt.

Improved Measuring Device, by actual length knit.

Sizes, 8 to 24 inches, inclusive, varying by one inch.

Number of Feeds, four to 12, according to style and diameter of machine.

Solid Forged Steel Cylinders, specially hardened or with patent inserted walls for fine fabric.

Special Machinery for Sweaters etc.

**We build Loopers, Ribbers and other Machinery for Knitting Mills**

As well as

**A Complete Line of Full Antomatic and 7-8 Automatic Seamless Hosiery Machinery.**

Full Particulars, Samples and Special Catalogues on Application.

**2079 E. Cumberland Street, Philadelphia, Pa., U. S. A.**

# BRANSON MACHINE CO.

BUILDERS OF

## KNITTING MACHINERY

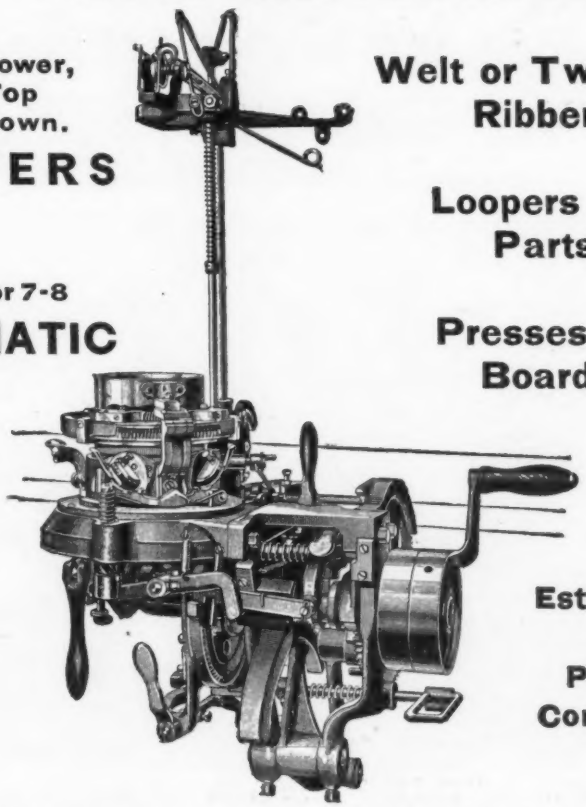
Hand or Power, Open Top or Hold Down.

**KNITTERS**

1-2, 3-4 or 7-8

**AUTOMATIC KNIT-TERS**

All Sizes and All Gauges.



Welt or Two-Feed Ribbers.

Loopers and Parts.

Presses and Boards.

Estimates for Plants Complete.

Winders and Bobbins. Hand Forged Steel Cylinders.

**BRANSON MACHINE CO.**

504 North American Street, : : Philadelphia, Pa.

Write for information and Catalogue.

# Hetheringtons

Are THE SOLE MAKERS of

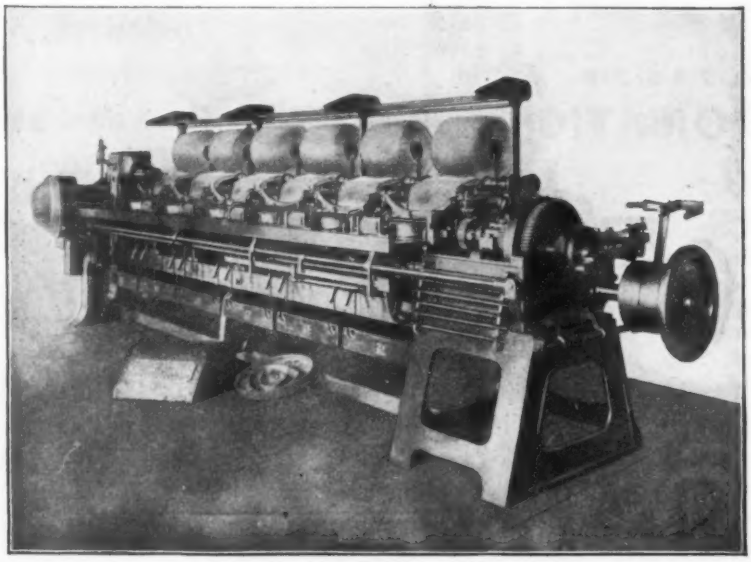
# THE NASMITH COMBER

FOR

## Fine and Coarse Combing.

## Deals with Staples from 7-8 in. to 2 in.

350 Combers now in Operation, 75 more on order.



MAKES A PERFECT PIECING ON SHORT STOCK.

Produces from 100 to 180 lbs. in ten hours according to quality required. Only one cam in the whole machine; all other motions are continuous.

Descriptive pamphlets and and all particulars, including arrangements for seeing machine in operation, from

## STEPHEN C. LOWE, 186 Devonshire St., Boston.

Sole Agent for United States and Canada for
JOHN HETHERINGTON & SONS, Ltd., Manchester, England.

# EVAN ARTHUR LEIGH

232 Summer Street (opposite the South Station), Boston, Mass.

SOLE AGENT IN THE UNITED STATES AND CANADA FOR

## Platt Bros. & Co., Ltd.

BY FAR THE LARGEST MAKERS IN THE WORLD OF

## Cotton, Woolen and Worsted Machinery

Platt Bros. & Co. are exhibiting in the Varied Industries Building. Louisiana Purchase Exhibition, St. Louis, Mo., the most complete line of Cotton Machinery that has yet been exhibited, for spinning from coarse counts up to 300's.

MATHER & PLATT, LTD.

Dyeing and Finishing Machinery. Archbutt-Deeley System for purifying and softening water.

TEXTILE MACHINERY ASSOCIATION, LTD.

Flax, Hemp and Jute Machinery.

THE PATENT AUTOMATIC FEEDING MACH. CO., LTD.

Patent Feeding Machines for wool, cotton, flax, fur and fibrous material.

GEORGE HODGSON, LTD.

Looms for Worsteds, etc.

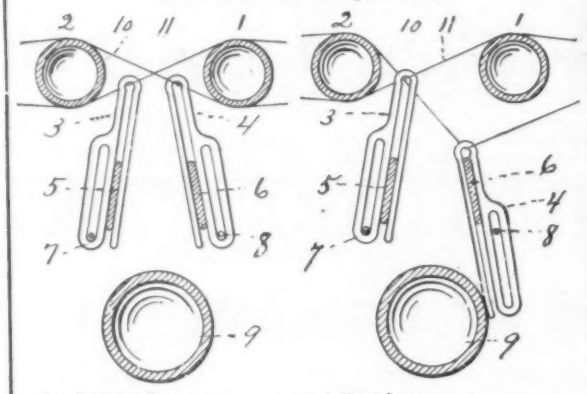
JOSEPH SYKES BROS., Card Clothing for Cotton.

JAMES CRITCHLEY & SON'S, Card Clothing for Woolen and Worsted.

DRONSFIELD BROS'. Grinding Machinery and Emery Filleting.
The best French and English Combing and Rubbing Aprons.
Harding's Pins and Circles, Varey's Fallers, etc.

THE "C. & G." IMPROVED STOP-MOTION AND METHOD OF APPLYING TO WARP.

*With Patent Drop Bars.*




1, 2, Lease rods.
5, 6. Upper circuit guide-rods.
9. Lower circuit bar.

3, 4. Drop-bars
7, 8. Retaining rods.
10, 11, Warp threads.

The above cut shows the stop-motion with drop-bars in normal position before break in warp thread, the electric circuit from the upper circuit guide-rods to the lower circuit bar "9" not being completed.

The above cut shows stop-motion after a break in warp thread "10," the drop-bar "4" having fallen and completed the electric circuit from the upper circuit guide-rod "6" to the lower circuit bar "9," thereby stopping the loom.

THE COLDWELL-GILDARD

# Warp-Stop Motion

## FOR LOOMS

(Broadly covered by Patents Issued and Pending)

Many thousands placed in successful operation during the past four years on coarse, medium, and fine cottons, velvets, plushes, ginghams and alpacas in leading mills.

**EFFICIENCY — SIMPLICITY — DURABILITY — ECONOMY**

Widest in Range of Use. Lowest in Cost of Maintenance.

Decreased Weaving Cost; Improved Quality of Product; A "Universal" Stop-Motion.

Samples and copy of our Illustrated Catalog sent on application

THE COLDWELL-GILDARD CO., 108-110 Hartwell St., - FALL RIVER, MASS.

**HENDERSON'S**

# Double Carding Process for Wool

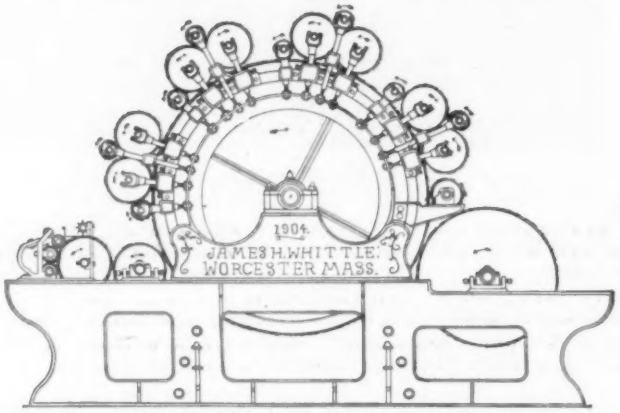
(Patented May 10, 1904)

**Is a Great Success.**

Manufactured By **JAMES H. WHITTLE,** 150 Harlow St., Worcester, Mass.

INCREASES PRODUCTION AND QUALITY

SAVES LABOR




SAVES ROOM

APPLIED TO EITHER OLD CARDS OR NEW

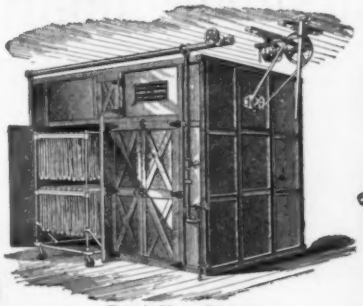
**WOOL AND WORSTED MACHINERY**

Including Carding Machinery for Wool and Worsted, Yarn Twisters, with or without Novelty Attachments, Yarn Dressers, Reels, Beamers, Single or Double. Yarn Spoolers, Dresser Creels, Cloth Dryers, of all widths, New Rotating Skein Dryers, Four and Eight Drum Spoolers, Improved Hydro Extractors, Improved Dusters with Fan, New Pattern Mixing Picker, Skein Drying Reels, etc.

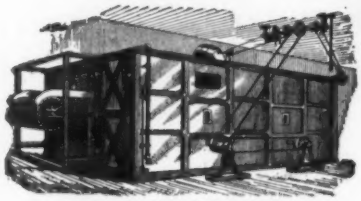
# "HURRICANE" DRYERS AND FANS

For WOOL, COTTON STOCK, YARN, STOCKINGS, UNDERWEAR, Etc.

Write for Booklets.



Truck Yarn Dryer.



Cotton Stock and Wool Dryer.

CARBONIZING,

BLEACHING,

"Hurricane" Fan, Style No. 2.

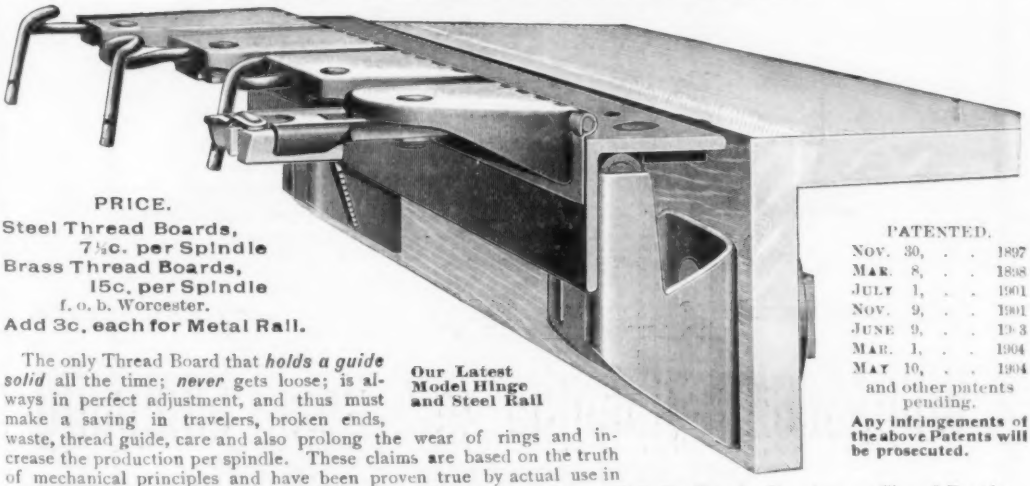
OXIDIZING, CHROMING and WASHING MACHINERY.

PHILADELPHIA DRYING MACHINERY CO.

6721 Germantown Ave., Philadelphia, Pa.

# HOUGHTON'S ALL STEEL THREAD BOARD

With Hardened Thread Guides.



Our Latest Model Hinge and Steel Rail

PRICE.

Steel Thread Boards,
7½c. per Spindle
Brass Thread Boards,
15c. per Spindle
f. o. b. Worcester.
Add 3c. each for Metal Rail.

PATENTED.

| | | |
|---|---|---|
| Nov. | 30, | 1897 |
| Mar. | 8, | 1898 |
| July | 1, | 1901 |
| Nov. | 9, | 1901 |
| June | 9, | 1903 |
| Mar. | 1, | 1904 |
| May | 10, | 1904 |

and other patents pending.

Any infringements of the above Patents will be prosecuted.

The only Thread Board that *holds a guide solid* all the time; *never* gets loose; is always in perfect adjustment, and thus must make a saving in travelers, broken ends, waste, thread guide, care and also prolong the wear of rings and increase the production per spindle. These claims are based on the truth of mechanical principles and have been proven true by actual use in many mills, whose superintendents will substantiate these claims. Write for list of mills using our Thread Boards.

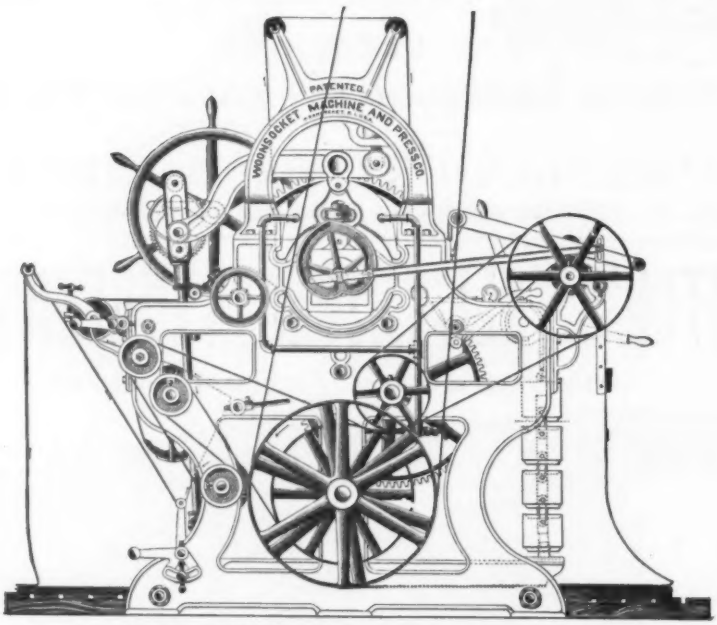
L. T. Houghton, Sole Manufacturer, Worcester, Mass.

# Best Patent Steam Rotary Cloth Press

## Four Separate Pressings In One Machine!

The Only Press that has Self-Yielding Beds with Four Points of Contact

**PERFECT TEMPERATURE, POWERFUL, SIMPLE**



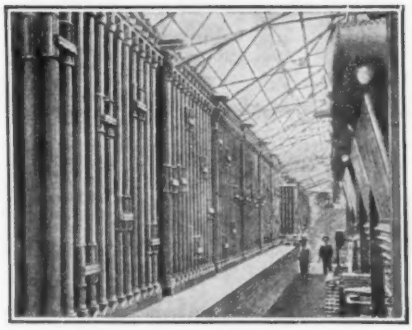

THE WOONSOCKET ROTARY PRESS.

# Woonsocket Machine and Press Company

WOONSOCKET, R. I,

# GREEN'S ECONOMIZER

SAVES
10 to 20%
in Fuel.



INCREASES
Boiler Capacity
20 to 40%.

Steam + Fuel

Steam + Fuel

It keeps a large volume of water above the boiling point always available in case of sudden demands for extra power or other emergencies.

The importance of these advantages in TEXTILE MILLS, BLEACHERIES, DYE WORKS, ETC., cannot be overestimated.

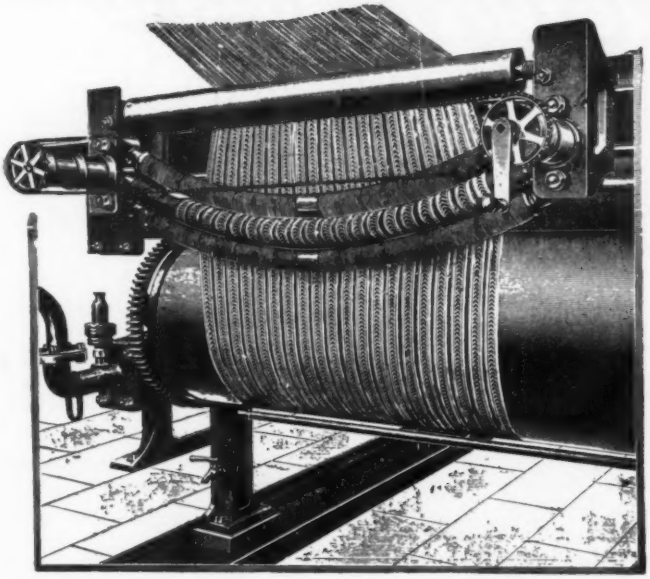
*Send for Catalog.*

Designed for high or low Pressure Natural or Mechanical Draft.

**THE GREEN FUEL ECONOMIZER CO.**
**Matteawan, N. Y.**
Sole Manufacturers in the U. S. A.

We Install Mechanical Draft Plants With or Without Economizer.

# A PERFECT CLOTH EXPANDER



The recent invention of Wm. Mycock, an English cotton manufacturer. Hundreds sold in Great Britian and on the Continent. Large bleacheries in this country where it has been placed on trial are delighted with it. Gets the full width of goods, with perfectly even tension both ways. Can be attached to calenders or cans. Put it on trial.

Patented in United States, Canada, Great Britain and Continental countries. Infringements will be prosecuted.

**THOMAS LEYLAND & CO., 53 INDIA ST., BOSTON**
Sole Agents for the United States and Canada.

NOT ONLY
THE LATEST
BUT ALSO THE
SIMPLEST and BEST.

# THE CAMLESS WINDER.

For Cones and Tubes.

Send for Descriptive Circular.

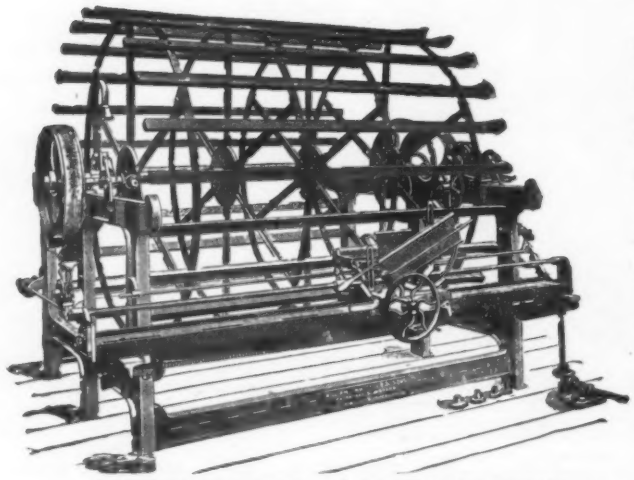
## The A. T. ATHERTON MACHINE CO.

PAWTUCKET, R. I.

Telegraphic Address: "WHITELEY, HUDDERSFIELD." Nat. Telephone, 598 and 599.

## Wm Whiteley & Sons Ltd

LOCKWOOD, HUDDERSFIELD.



WARPING MILL WITH PATENT SECTION DIVIDER.

Makers of all descriptions of

Tentering and Drying Machines.

Moore & Whiteley's Patent Wool and Cotton Dryer.

Crabbing or Winding-on Frames.

Cross Raising Machines, Wool Scouring Machines.

Hydro Extractors. Warp Sizing.

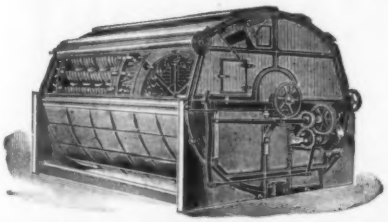
Cool Air Drying and Beaming Machines.

Warping Mills with Patent Sectional Dividing Apparatus.

Self-Acting Mules. Bobbin or Pirn Winder, &c., &c.

Mercerizing Machinery.

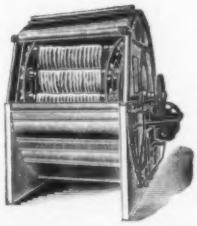
## SKEIN AND SLUBBING MACHINES



**SAVES**

75% in Labor.
30% in Winding.
Steam and Dye Stuffs.
No Friction.
No Tangling.

**CAPACITY**
**50 to 700 lbs per batch.**



# THE KLAUDER-WELDON DYEING MACHINE CO.

**AMSTERDAM, N. Y.**

**Builders of Machines**

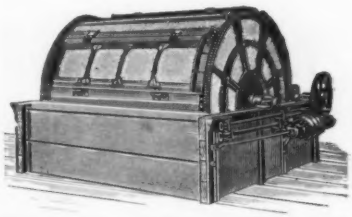
For Skein—Worsted, Slubbing, Cotton and Silk.
" " and Warp Mercerizing.
" Raw Stock Cotton, Wool, Waste and Rags.
" Garments Underwear, Hosiery and Caps
" Sulphur Colors—Raw Stock, Skein and Hosiery.

## RAW WOOL AND COTTON MACHINES.

**CAPACITY**
**200 to 1000 lbs per batch.**

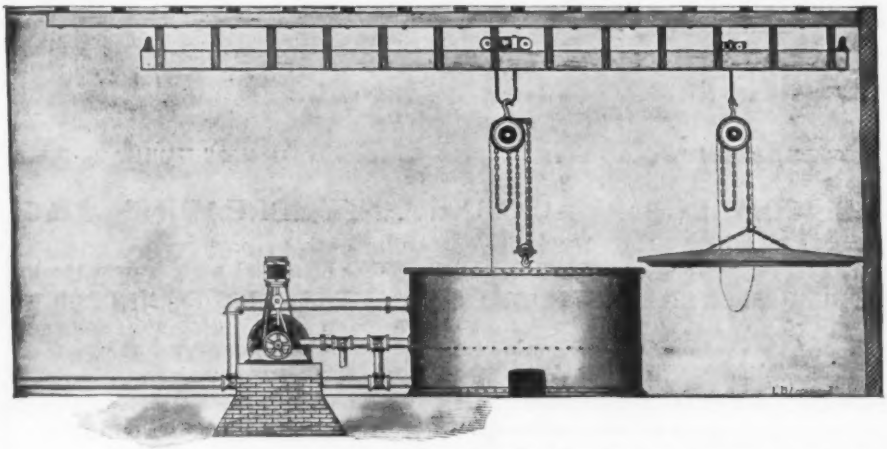
**SAVES**

50% in Labor besides Steam and Dye Stuffs. Practically indestructible. Leaves stock in perfect condition.



# VACUUM DYEING MACHINE CO., CHATTANOOGA, TENN.

**RAW STOCK, YARN AND HOSIERY DYEING MACHINES**



OFFICE OF TREMONT & SUFFOLK MILLS, LOWELL, MASS., Jan. 14, 1904.

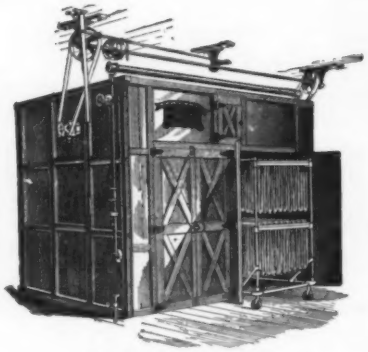
VACUUM DYEING MACHINE CO., Chattanooga, Tenn.

GENTLEMEN: Replying to your inquiry in regard to what we think of your Raw Stock Dyeing Machine, would state that we have been using one about six months, with very satisfactory results, the dyeing being level, and the stock left in first-class condition for spinning. Can give your machine no better recommendation than to say, we think so well of it that we have just placed an order for two additional machines.

Yours truly J. J. CONNELL, Agent.

# "20th CENTURY" MACHINERY

DRYERS
for
WOOL,
COTTON STOCK,
YARN, STOCKINGS,
UNDERWEAR.
VENTILATING FANS.
MACHINERY
for
CARBONIZING
and
YARN SCOURING.



TRUCK YARN DRYER.

CLOTH WASHERS
and
CLOTH DYEING MACHINES, BLEACHING MACHINERY FOR KNIT GOODS, ETC.
CONTINUOUS SYSTEM FOR BLEACHING COTTON STOCK.
TOM-TOMS,
CHROMING, WASHING
and
OXIDIZING MACHINES.

## AMERICAN DRYING MACHINERY COMPANY,

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**LAWSON BRANCH,**

**Hope Foundry.** **LEEDS.** **England.**

MAKERS OF MACHINERY FOR

## PREPARING AND SPINNING FLAX, HEMP, TOW AND JUTE

AND OF

**Special Machinery for the Manufacture of Twines,**

ALSO OF

GOOD'S COMBINED HACKLING AND SPREADING MACHINE,

LONG REACH SCREW-GILL DRAWING FRAMES,

CHAIN-GILL DRAWING FRAMES with Apron Head,

PATENT HIGH-SPEED HORIZONTAL AND AUTOMATIC SPINNING FRAMES FOR MANILLA,

AND OTHER

Special Machinery for the manufacture of Rope Yarns and Binder Twine.

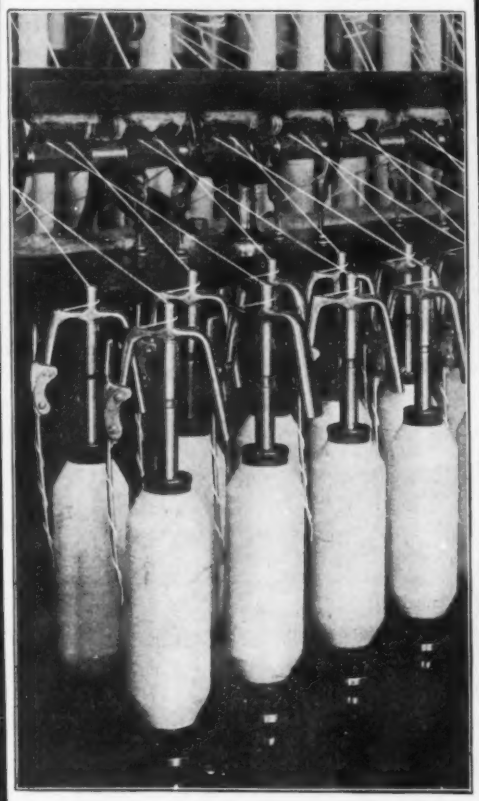
**IMPROVED LAYING MACHINES. HASKELL-DAWES TUBING TWISTERS**

BROWNELL'S PATENT TWISTING AND LAYING MACHINES FOR TWINE.

*Complete Plans and Estimates for Flax, Tow, Hemp and Jute Mills, Trawl Twine Factories and Steam Ropeworks.*

# THE DUNN FLYER

Presents new principles and methods in Flyer construction that have proved their value and made its use of marked advantage.



**3½ Inch Diameter Bobbins**

are built with 7x3 Dunn Flyers on 4½" space frame with the further advantage of being able to run as fine as 15 hank roving on same flyers. Further information may be promptly obtained by addressing the

**TEXTILE MACHINERY COMPANY**
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**EASTON AND BURNHAM MACHINE CO.**

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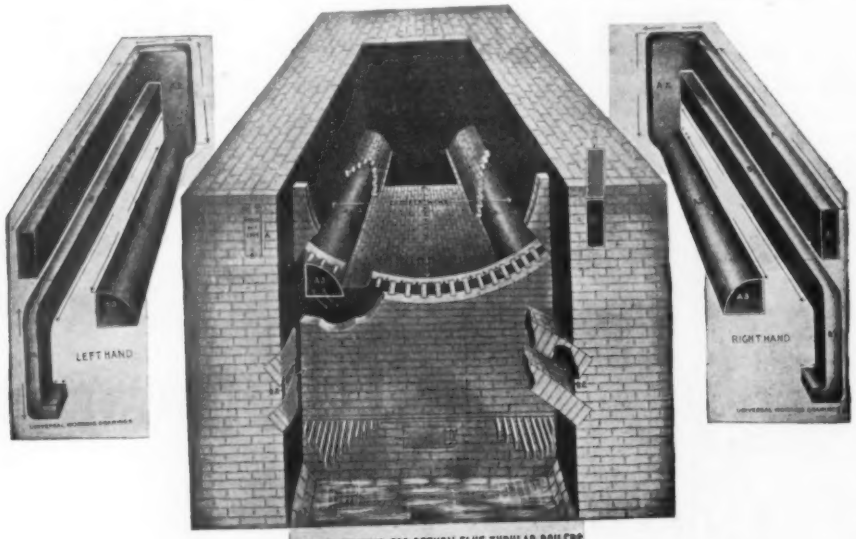
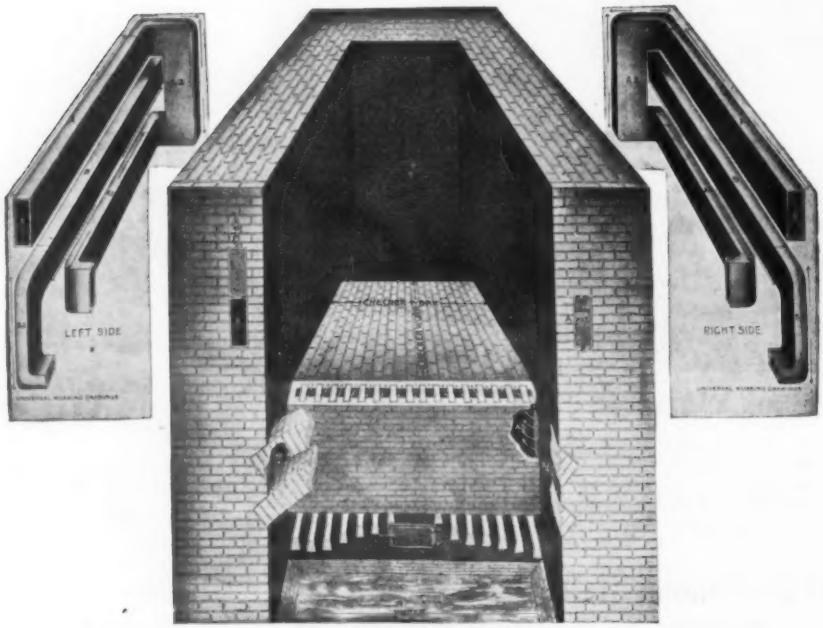
REPAIRS FOR RABBETH SPINDLES

# The Smoke Nuisance and the Profligate Waste of Fuel is Settled for all time

**By the invention and practical operation of the DR. J. B. HARRIS SYSTEM. Absolute combustion of soft coal in steam boiler furnaces. NO SMOKE.** Cheap and efficient. Harris' Smoke Consuming Furnaces last as long as the boiler. 35 per cent. to 50 per cent. cheaper. By actual test evaporates 33 1-3 to 40 per cent. more water per pound of combustible. Burns any kind of fuel without smoke. Burns crude oil without smoke or odor. Pays for itself in six months. Patented March 22, 1904.




TYPICAL SETTING FOR RETURN FLUE TUBULAR BOILERS




TYPICAL SETTING FOR WATER TUBE BOILERS

Heine, Franklin, Geary, and with modifications in floor of Combustion Chamber suited to Babcock & Wilcox, Zell, Root, Stirling, etc.

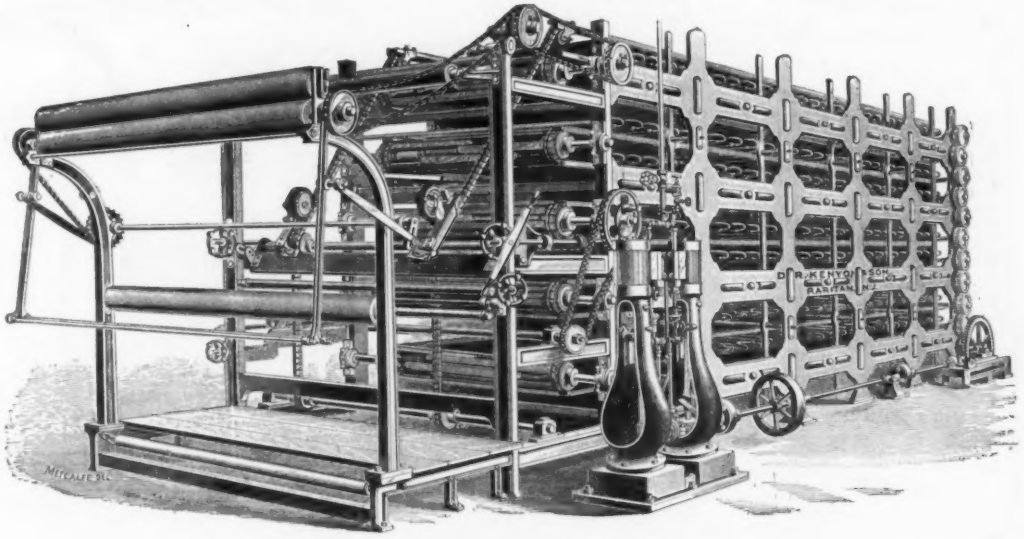
Write for catalogue. County and State rights for sale, with or without royalty.

**J. B. HARRIS, M. D.,** Patentee and Sole Owner, **71 Arcade, Nashville, Tenn.**

# Tentering and Drying Machines

WITH LOW DOWN FEED. PATENTED FEBRUARY 26, 1895.

**Tentering and Drying Machines on Pipe System. Special Dryers for Heavy Felt Goods. Hot Air Drying and Tentering Machines.**



Fulling Mills, Washers, Chinchilla and Whitney Machines, Whipping Machines, Cone Willows, Marsden & Blamire Lap Feed, Dyeing Machines for Piece Goods, Soaping Machines, Wringing Machines, Jigs, (double or single,) Dewing Machines, etc.

MANUFACTURED BY

## D. R. KENYON & SON,

SUCCESSORS TO KENYON BROS.

Long Distance Telephone, Somerville 40-B.

RARITAN, N. J.

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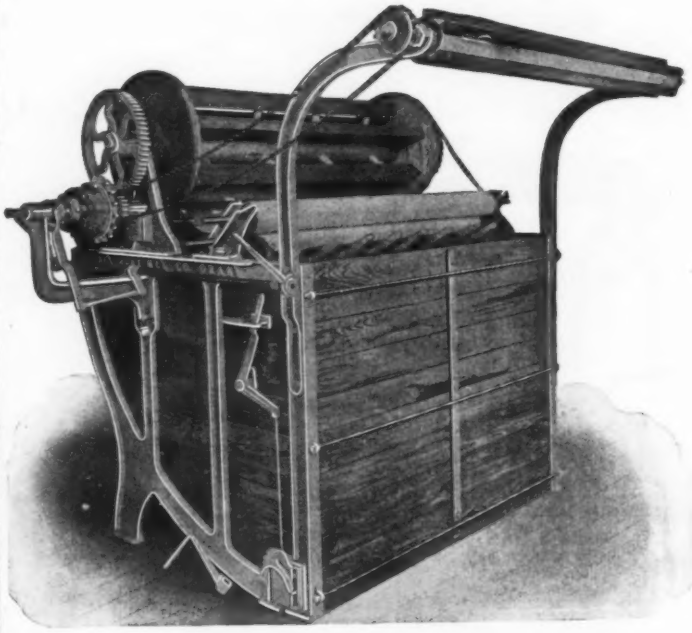
WATER WHEELS,
Horizontal and Vertical.
Iron Flumes and Penstocks.
Rotary Fire Pumps.
Centrifugal Pumps.
Head Gate Apparatus.
Water Wheel Regulators.
Rotary Fulling Mills.
Rotary Cloth Washers.
Rotary Knit Goods Washers.
Combined R'y Fulling Mill
and Washer for Knit Goods.
Endless Felt R'y Washers
and Rotary Felling Mills.
Hammer Falling Stocks.
Dolly Washers.
Crank Fulling Mills.
Crank Knit Goods Washers.
Wringing and Rinsing Mchs.
Reel Dyeing Machines.
Carbonizing Machines.
Bleaching Machines for
Chloride of Lime and
Peroxide of Sodium,
Dye Tubs and Rinsers.
Wool Washers.
Soaping Machines.
Cloth Winders.

## New Dyeing Machine



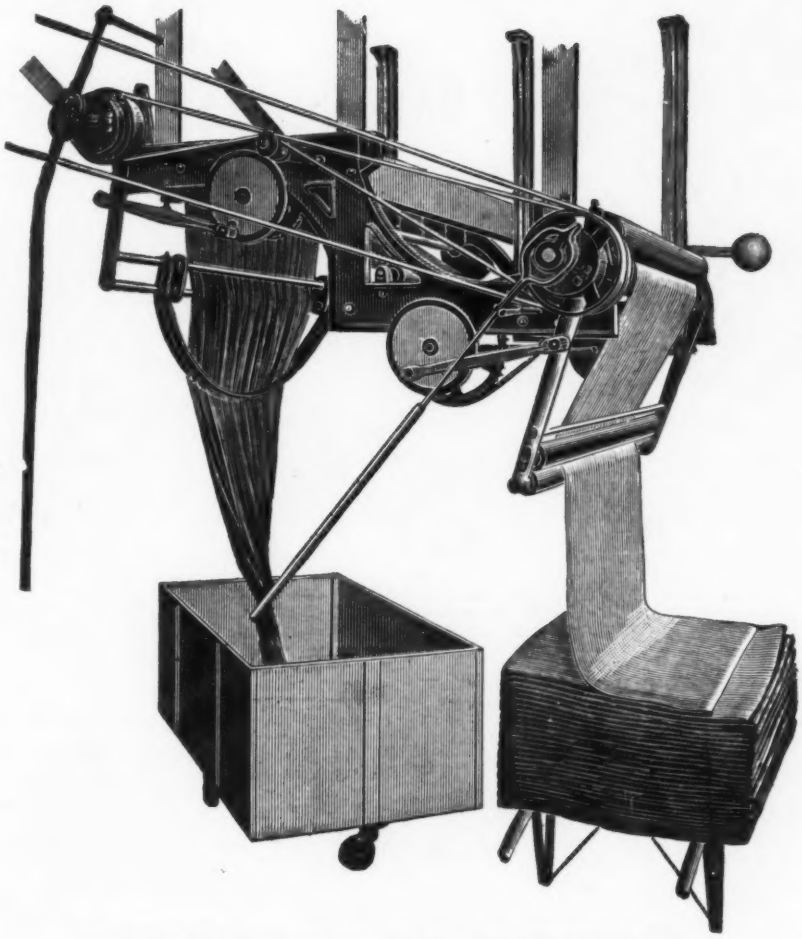
TYPE L. FOR CLOTH AND KNIT GOODS IN THE PIECE.

TYPE M. FOR BLEACHING COTTON KNIT GOODS, CIRCULAR No. 16.

Boston Office,
70 KILBY STREET,
Telephone No. 1522.

Main Office and Works,
ORANGE, MASS.

# The Hunter CLOTH OPENER AND FOLDER



*ONE MAN CAN OPEN AND FOLD MORE GOODS IN A DAY WITH THIS MACHINE THAN FOUR MEN CAN DO BY HAND.*

No stretching or beating of goods under tension. All the parts coming in contact with cloth are brass or wood.

Opens any width of cloth from 63 inches down to 30 inches. Can be built wider for blankets.

**James Hunter Machine Co.,** North Adams, Mass.

**You Want the Best. We Build Them.**

# CLOTH WASHERS, FULLING MILLS,

1901 FULLING MILL.

Piece Dyeing Machines,
Dye Tubs, Vats,
Tanks, etc.

## HOPKINS MACHINE WORKS

Providence and Bridgeton, R. I.

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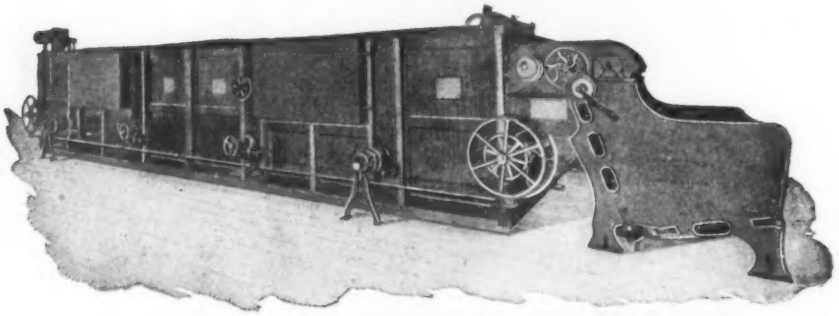
49 Westminster Street.

Our Machines are up to date.
Patented features found in no others.
Most effective and economical machines built.

Send for Catalog, Prices, and also ask about our Fulling Mill for extra heavy goods and blankets.

# C. G. SARGENT'S SONS,

GRANITEVILLE, MASS.



... BUILDERS OF ...

Stock Dryers, Wool Washers,
Wool Dusters, Carbonizing Plants,
Burr Pickers, Etc.

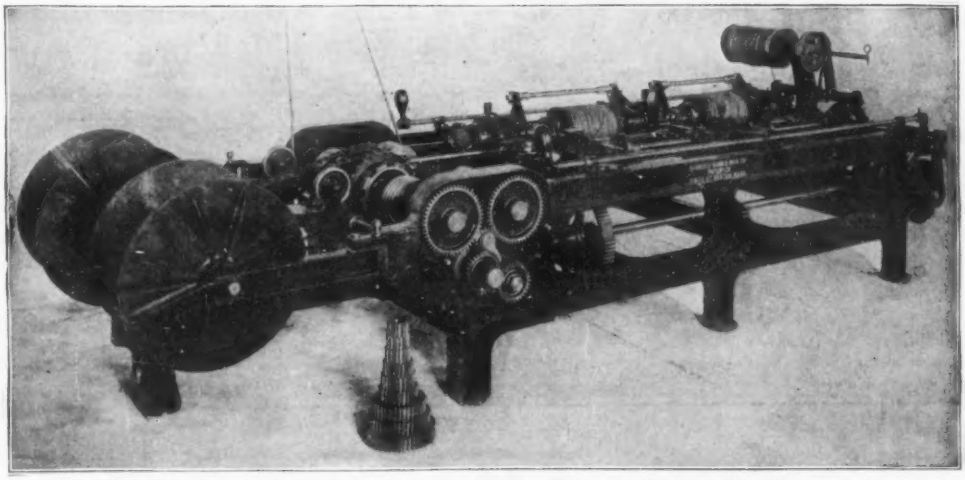
## THE HASKELL-DAWES MACHINE CO.

Manufacturers of the best types of

# Forming, Twisting and Laying Machinery

Which are adapted for making all kinds of

## COTTON CABLE-LAID TWINE, CORD and ROPE



The Haskell-Dawes Machines are built upon a NEW PRINCIPLE, whereby the MOST POSITIVE RESULTS ARE SECURED. They occupy LESS SPACE than the ordinary type of machines, require LESS RELATIVE POWER, and will turn out a MUCH LARGER PRODUCT of Twine and Rope. The SPECIAL ATTENTION of Cotton Manufacturers is called to our new FORMING AND ROPE-LAYING MACHINES. Descriptive Catalogue Sent on Application.

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# BRAIDING MACHINERY

ALL STYLES AND KINDS FOR FLAT AND ROUND BRAIDS.

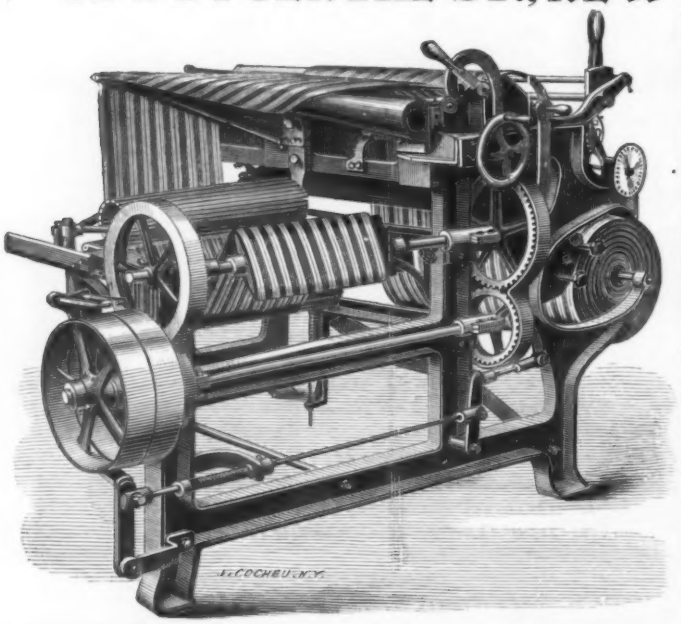
SOLID SASH AND CURTAIN CORDS,

SHOE AND CORSET LACES, BANDING

AND ALL BRAIDED FABRICS.

# Fabric Measuring & Packaging Co.

**82 & 84 CENTRE ST., NEW YORK, U.S.A.**



## Machines to Print Trademarks

On Cottons, Woolens and Carpets.

## Machines to Measure

and imprint the measurement upon fabrics, fold lengthwise and roll into merchantable packages all in one operation.

Prevents claims for short measure.
Marks piece numbers on each package.

**A Fully Equipped Machine Shop for General Work.**

THE OLD WAY.

Oiling stock with a tin can with holes punched in the bottom, or a watering pot. Wasteful of oil and labor and seldom done twice alike, but is still used in some mills.

# What Changes!

THE MODERN WAY.

Oiling and dampening stock with the Spencer Automatic Oiler applied to feed table of wool picker, lumper or lapper. Batches treated as desired. Perfect regulation.

Not much need to dwell upon the advantages of the automatic system, by which uniform results are obtained with saving of oil and labor, as compared with the sloppy, guess work, waterpot system.

It's the story of the Bramwell and Apperly feeders over again. How many mills are feeding by hand to-day? There will be very few oiling by hand in a few years. Hundreds of the best mills are using the Spencer Oiler to-day. Are you? If not, send for particulars.

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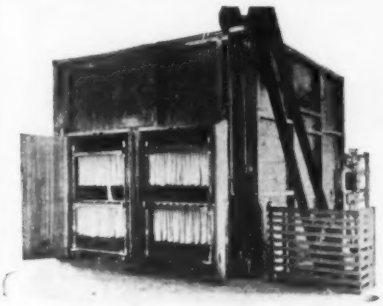
DYEING
DRYING
AND
FINISHING
MACHINERY

# ARLINGTON MACHINE WORKS
## ARTHUR BIRCH
### ARLINGTON HEIGHTS, MASS.

CONTINUOUS WET FINISHING MACHINES

WOOLEN
AND
WORSTED
FINISHING
MACHINERY
SEWING
MACHINES



## FRANK BAILEY,
BUILDER OF
## YARN DRYING MACHINERY
ON THE

**COLD AIR SYSTEM.** Simple, effective, inexpensive. Leaves yarn in beautiful condition.

ALSO ON THE

**HOT AIR SYSTEM** when great capacity is wanted.

**DYE STICKS,** Kettle Sticks and dry and sulphur house Poles, also Sticks to suit the Wolstenholm Machine from natural water grown cedar, and Sticks to suit the Klauder-Weldon, Lorimer and Hussong machines from finer grades of lumber. These Sticks have been thoroughly tested, and pronounced the best on the market. Guarantee satisfaction to buyers. Write for prices.

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Patented in the United States and Foreign Countries.

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## WROUGHT STEEL
## PULLEY

Is a parting PULLEY and can be applied without stripping the shaft.
It is Light, STRONG, and lasts a lifetime.
It clamps to the shaft perfectly — keys and set-screws superfluous.
Interchangeable metal Bushings to fit shafts of different sizes.
Particularly adapted to TEXTILE manufacturing.

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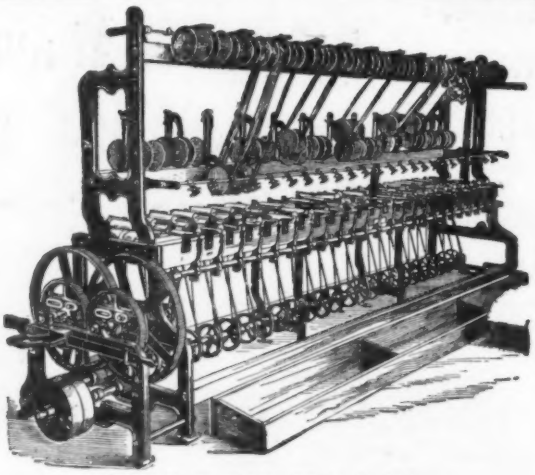
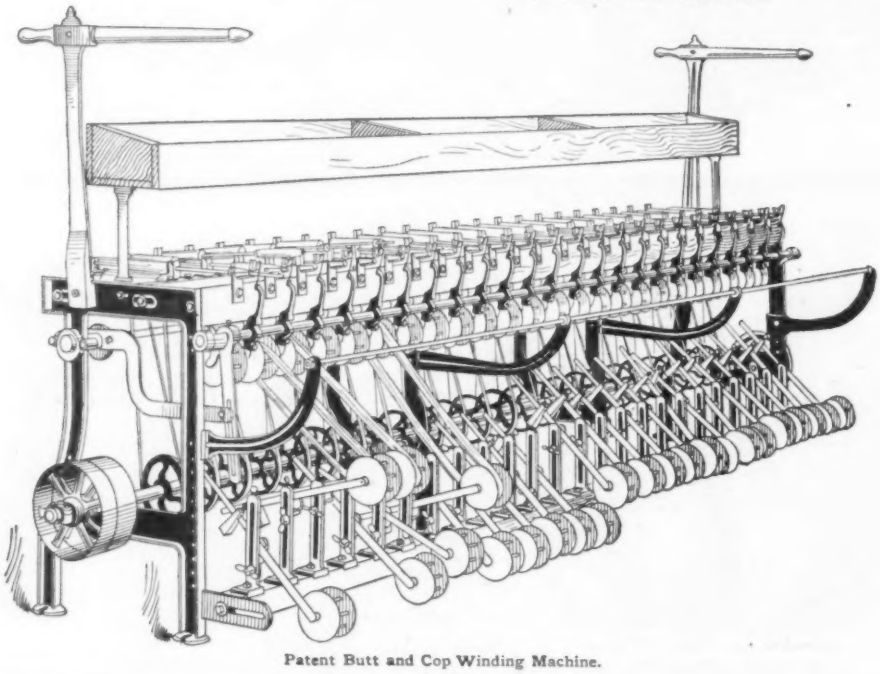
# SPOOLING, WINDING, WARPING AND BEAMING MACHINERY



Patent Shuttle Bobbin Winder for Skeins, with Patent Variable Motion.

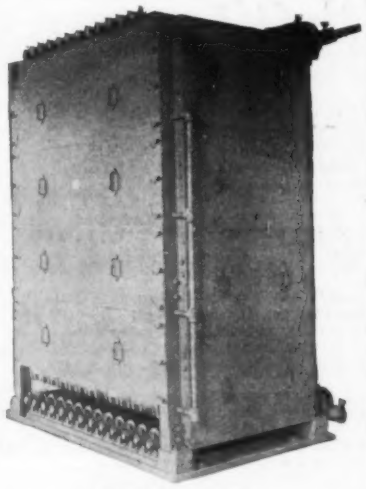


Patent Butt and Cop Winding Machine.

## JACOB K. ALTEMUS,

2818 North 4th Street, PHILADELPHIA, PA.

FULL PARTICULARS ON APPLICATION.



50 CELL DRYER.
Capacity same as 40 Cans.

*The Vacuum and Cell Dryers are simple, compact, efficient, and inexpensive to buy, install and operate. They are rapidly replacing cans in the drying of cloth and yarn. It is only a question of time when they will be in general use. Mills cannot now afford to put in dry cans, and do not if they have investigated the Vacuum and Cell Machines.*

Send for Prices to 15 State Street, Boston.

**Vacuum Process Company**
MANUFACTURERS OF
*Modern Drying Machinery.*

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"Newman's" Latest Improved Portable Clock.

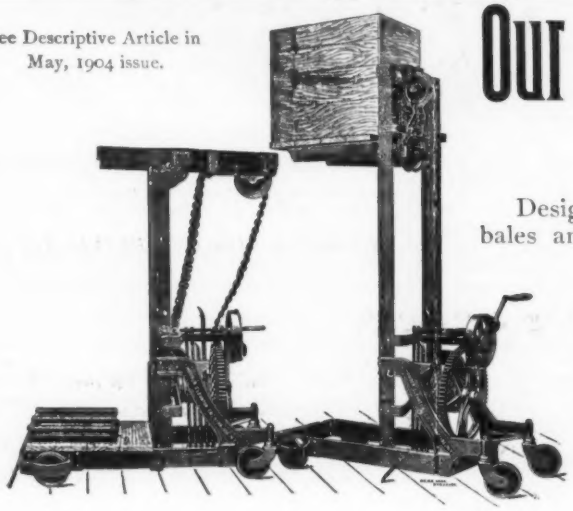
**WATCHMAN'S CLOCKS,** *Electric and Portable.*
*Engine Room and Factory Clocks.*
*Time and Dating Stamps.*

ELECTRIC TORCHES.

**RIGGS & BROTHER,** 310 Market St., Philadelphia, PA.

Send for Catalogue and Prices.

See Descriptive Article in May, 1904 issue.



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**Is a great LABOR SAVER**

Designed especially for piling cases, bales and heavy packages. One man can lift 800 lbs. with ease. In use in many representative mills. Write for illustrated circular giving list of users. We have received many gratifying letters from mills speaking of the entire satisfaction received.

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No. 9 Market St., AMSTERDAM, N. Y.

WM. FIRTH, Pres. EDWIN BARNES, Vice-Pres. JOHN H. NELSON, Treas.

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## ASA LEES & CO., Limited,

## TEXTILE MACHINERY,

OF EVERY DESCRIPTION FOR COTTON, WOOLEN AND WORSTED.

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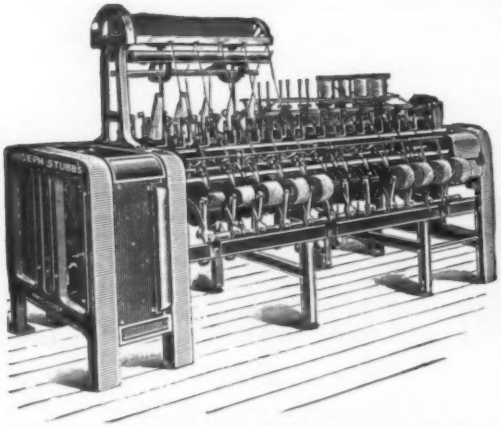
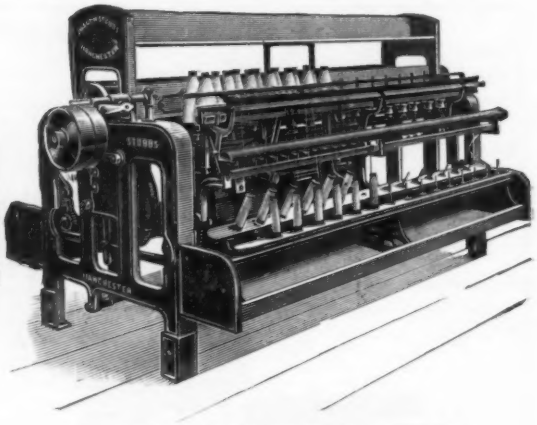
# SPECIAL MACHINERY,

For Winding Gassing, Reeling, Preparing, Polishing and Bundling Yarns.



PATENT QUICK TRAVERSE COTTON GASSING FRAME.



IMPROVED RABBETH SPINDLE WINDER.
With Patent Tapering Motion, for Single Flanged Bobbins.

Sole Agents for the United States and Canada:

*WILLIAM FIRTH COMPANY, 67 Equitable Buildings, 150 Devonshire Street, BOSTON, MASS.*

# Pulley and Gear Forcer.

We build a simple, powerful and very effective machine to remove gears and pulleys from shafting. Many mills use them. **Only costs $8.00.** Saves its cost in time and breakage.

BAMFORD & SMITH, Pascoag, R. I.

WILLIAM FIRTH, Pres. THE FRANK B. COMINS, Treas.

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**Equitable Bldg., Boston, Mass.**

Received the HIGHEST AWARD on recomendation of the FRANKLIN INSTITUTE for

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Is the largest manufacturer of HUMIDIFIERS in the World. The last twenty years receiving the HIGHEST AWARDS in this country and Europe for its AIR-MOISTENING SYSTEM. EIGHT GOLD MEDALS and others.

## The Only Perfect System of Air Moistening

**And Has Been Adopted by the Representative Manufacturers of this Country.**

The only System adopted in the Textile Schools. Write for Booklet "T" on Humidification. Legal Proceedings will at once be taken against infringers and users of infringements.

**J. S. COTHRAN,** Southern Representative, Empire Bldg., **ATLANTA, GA.**

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FOR COTTON, AND GINGHAM MILLS, BLEACHERIES, PRINT WORKS, ETC.

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Send for Circular.

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**SILK MILL SUPPLIES**

OF EVERY KIND AND DESCRIPTION

Also Power Transmission Supplies for General Mill Use.

*I. A. HALL & CO.*
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Allentown Reed, Harness and Mill Supply Co., Allentown, Pa.

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**BAKER MACHINE CO.**

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**Steel Rolls**

Renecked PROMPTLY with

**Crucible Steel**

*Our Pressers are Hand Forged from Norway Iron*

Made any weight desired as per sample sent us.

*ORDERS TAKEN FOR ANY NUMBER FROM 12 TO 1000.*

The best skilled English workmen employed on both our flyer and presser work. Write for prices and discounts. Steel Rolls renecked. *Don't throw away your old flyers. Send them to us and we will save you money.*

We Braze on Nibs.

We Repair the Ends

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**Dixon's Graphite Lubricants**

give unusually satisfactory results.

That means an end of friction troubles and less oil, coal and repairs. Dixon's newest Booklet,

**"Graphite Lubricants"**

will be freely mailed upon request.

JOSEPH DIXON CRUCIBLE CO., Jersey City, N. J

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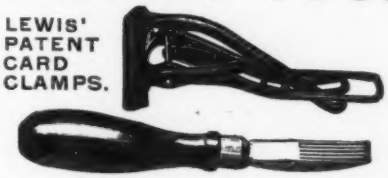
**CARDER'S TOOLS**

LEWIS' PATENT CARD CLAMPS.



**Gardner & Reid's Card Tooth Raiser.**

For Setting Up Bent Teeth of Card Clothing with a variety of all other tools used by Carders and Manufacturers. Send for circular.

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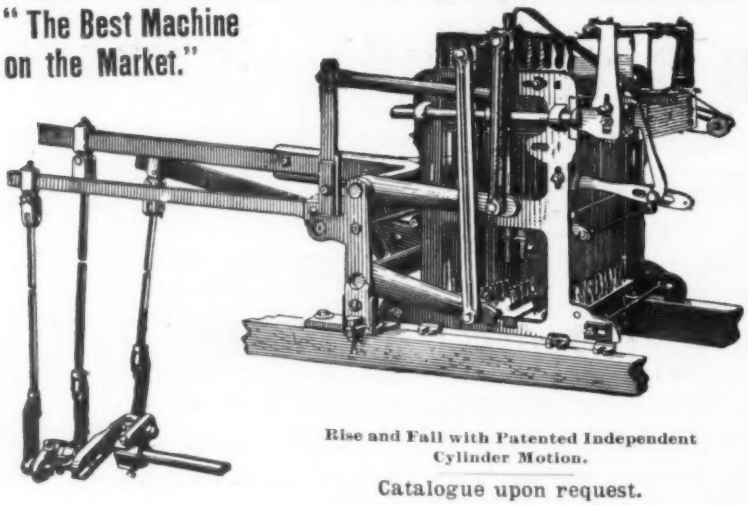
"The Best Machine on the Market."



Rise and Fall with Patented Independent Cylinder Motion.

Catalogue upon request.

USE THE

HALTON JACQUARD

Original Fine Index Machines

Single Lift, Double Lift, Double Cylinder, Rise and Fall, Crossborder.

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Allegheny Avenue and C Street,

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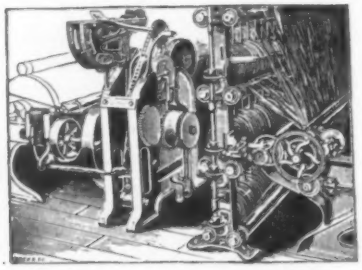
Representatives:
H. A. Forbes, Paterson, N. J.
Alexander & Garsed, Charlotte, N. C.



TORRANCE MFG. CO.,

HARRISON, N. J.

TORRANCE PATENT AUTOMATIC BALLING MACHINE

With all the latest improvements for Wool Cards. The latest and best and only Feed that will make yarn positively even.

ALSO

CHOQUETTE WASTE SAVER. Saves card fly.

Write for particulars.

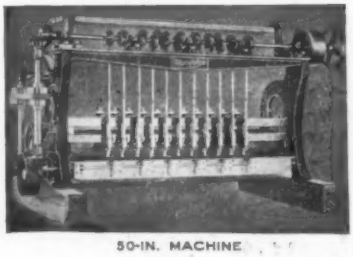
L. B. BRAINERD, President. F. B. ALLEN, Vice-Pres't. J. B. PIERCE, Secretary. L. F. MIDDLEBROOK, Ass't Secretary.

HARTFORD STEAM BOILER INSPECTION AND INSURANCE CO. HARTFORD, CONN

NEW ENGLAND DEPARTMENT
101 MILK STREET,
BOSTON, MASS.

C. E. ROBERTS, Manager.
W. H. ALLEN, Ass't Manager.

STEAM USERS of this country have upwards of 90,000 Steam Boilers under the inspection and insurance supervision of this company.



50-IN. MACHINE

L. F. FALES

MANUFACTURER AND BUILDER OF

SEWING Maniplex MACHINES

FOR ALL PURPOSES WHERE A NUMBER OF ROWS OF SEAMS ARE REQUIRED

BUILT WITH ANY REQUIRED NUMBER OF NEEDLES.

DESIGNER OF SPECIAL MACHINERY | WALPOLE, MASS. U. S. A. | PAPER SLITTING MACHINES

## The Metallic Drawing Roll Co.

INDIAN ORCHARD, MASS.

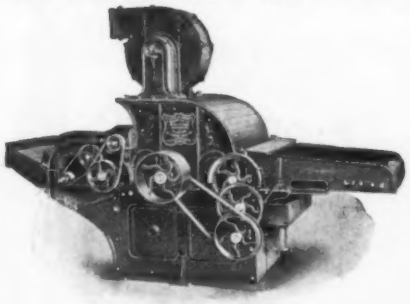
MANUFACTURERS OF

# Metallic Rolls

Especially adapted for Cotton Mills. 25 to 33 per cent more Production Guaranteed. Weight Reduced 33 to 50 per cent. No Leather Covering Bill.

WRITE FOR PARTICULARS.

## CURTIS & MARBLE MCH. CO., WORCESTER, MASS.



BURR PICKER.

*Wool Burring and Picking Machinery.*

**Cloth Finishing Machinery.**

## R. H. HOOD,

**Successor to THOMAS RAMSDEN,**

Maker of

# Worsted Machinery,

**For Preparing, Finishing Gills and Drawing Boxes**

New Screws made and old ones repaired and thoroughly case-hardened

Repairs and new parts for curled hair machinery. Fallers of every description made. Change Gears, 5-8, 7-16, 3-8 and 1-4 inch pitch kept on hand. All kinds of new Fluted Rollers, for Combs, Gills, Drawing and Spinning; also Refluting old ones. Improved Roller Covering Machine.

**1842-44-46 GERMANTOWN AVENUE, PHILA., PA.**

## T. C. ENTWISTLE COMPANY

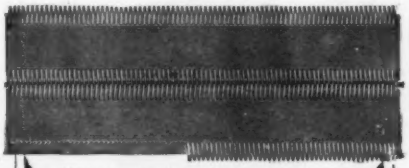
# Card Grinders

## TRAVERSE WHEEL AND LONG ROLL

Particular Attention Paid to Repairing Grinders of All Kinds and Makes

*LOWELL, MASS.*

# FREE



6000 inches of coil-wire lacing goes with every

**Jackson Belt-Lacing Machine**

purchased. This will lace as many belts as $75.00 worth of lace leather, a price which practically pays for the machine

**See the point?**

The advantages are all explained in our booklet.

**Diamond Drill & Machine Co., Birdsboro, Pa.**

Agents. J. D. McIlwain Co., Pittsburg, Pa.; E. A. Kinsey & Co., Cincinnati, O.; Chas. F. Belsey & Co., Chicago, Ill.; W. R. Colcord Machy Co., St. Louis, Mo.

## WILLIAM SCHOFIELD CO.

**Krams Ave., formerly Church St., Manayunk, Phila., Pa.**

# IRON FOUNDERS

**AND TEXTILE MACHINERY BUILDERS**

Makers of Rag, Wool, Hair and Finishing Pickers, **Automatic** Square and Cone Willows, "Schofield" Intermediate Feed for Cards, Rag and Extract Dusters, Waste Pullers, Worsted and Shoddy Reels, All Kinds of Spike and Slat Aprons.

**Special Machinery Built** **General Machinery Repairs**

**Relagging Picker Cylinders a Specialty**

# BARNEY COMPOUND FANS

## Are Used by the Leading Mills, Factories, Public Buildings and Institutions.

They insure perfect ventilation; ample circulation of pure, live air loaded with the health giving oxygen, and remove dust, odors, smoke, gases, moisture, etc., thus assuring hygienic conditions.

*And That's a Direct Source of Economy.*

Healthy conditions insure healthy workers; healthy workers produce the most, the best work.

Tell us what you want and we'll tell you what we'll do. Free!

FACE VIEW.

**BARNEY VENTILATING FAN WORKS,**

ALBERT B. FRANKLIN, Proprietor. 165-7 FORT HILL SQUARE, BOSTON, MASS.

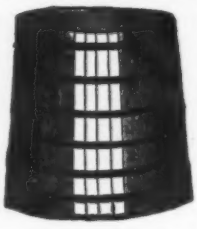
# THE CYPRESS LUMBER CO.

**TWO BIG FACTORIES.**

**TANKS**

NORTHERN
Boston,
Mass.

Write Nearest



**TANKS**

SOUTHERN
Apalachicola,
Florida.

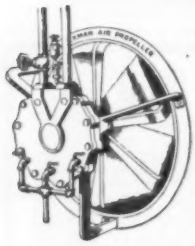
Write Nearest

CYRUS BORGNER CO.
SUCCESSORS TO CYRUS BORGNER
23rd ST. ABOVE RACE PHILADA. PA. U.S.A.

# FIRE BRICK AND CLAY RETORTS

# Blackman Fans

**With Direct Connected Engines.**



**ECONOMICAL** FIRST COST OPERATION

Can be run at any speed and any time. No long shafting and belts to waste power.

For Dye Rooms, Factories, Boiler Rooms, or where there is moisture or dust they are the best apparatus ever installed.

**E. M. NICHOLS,**

639 Arch St., - PHILADELPHIA, PA.

**Write for particulars.**

# A. J. BECKLEY CO.

**284 Pearl St., New York City.**

## Perforated Copper

For Wool Scouring, Renser Boxes, Dyeing of Raw Cotton. Duster Screens, Picker Screens.

**PERFORATED SCREENS OF ALL KINDS.**

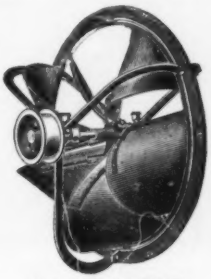
**Factory, Garwood, New Jersey.**

# THE BERRY SYSTEM OF DRYING

Applied to Cloth, Wool, Cotton, Drying Rooms, Tables or Machines makes a guaranteed increase of 25 per cent.

We Improve CARBONIZERS Also.

This is the Berry Wheel, the most efficient agent for moving air, eliminating steam and other impurities in the atmosphere.

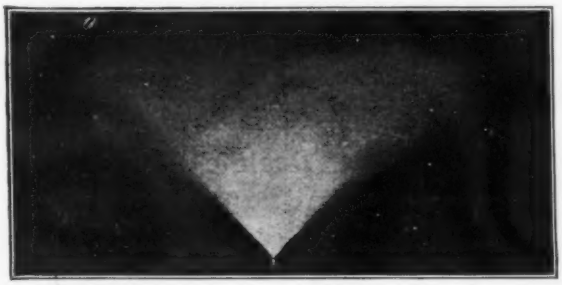


A. HUN BERRY,
23 West First Street,
BOSTON.

# SCHUTTE & KOERTING CO.

**Engineers and Machinists, 12th and Thompsons Sts., Phila., Pa.**

Spray Nozzle emitting water in a fine spray or vapor.

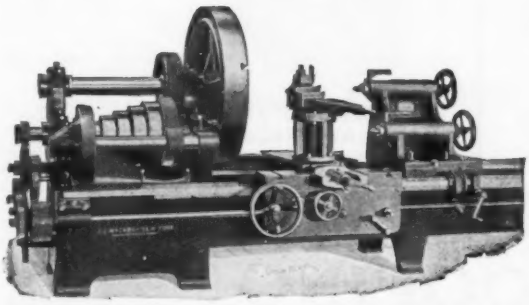


## Complete Humidifying Plants

For Woolen Mills, Cotton Mills, Spinning Mills, Silk Mills, etc.

We also manufacture Injectors, Blowers, Condensers, Syphons, High Class Valves, Sulphur Furnaces for Bleaching Purposes.

CORRESPONDENCE SOLICITED.



McCabe's "New Style" 26-48 inch Double Spindle Lathe.

## A QUESTION OF "Availability"

There's a heap o' satisfaction in having a Lathe around that'll "do things."
That's the sort of a tool, Repair-shops "need in their business," and a Double-spindle's the only one that'll "hit the mark."
McCabe knows it—he has built it—500 users know it—they've tried it.
Right up to the scratch in every way.
Built for shops "where room counts."
Built of any length you want, in big lots at a time and therefore sold at a very interesting figure.

Get a catalog on our say so.

**J. J. McCabe,**
**14 Dey Street, - New York.**

Established 1870

**John Heathcote & Son**

Providence, R. I.

Builders of Improved

**Cloth Tentering and Drying Machinery**

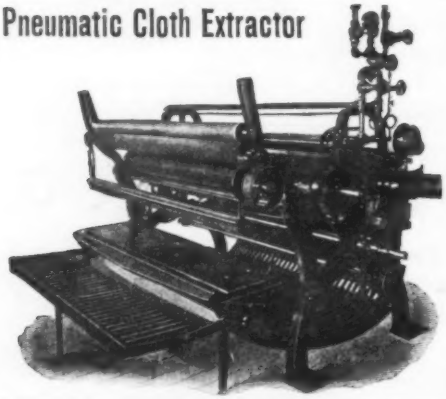
for WOOLENS, WORSTEDS, FELTS, etc.

*Built Upright or Horizontal with Low Down Feed*

*Ventilating Fans a Specialty*

Send for Catalogue

**Pneumatic Cloth Extractor**



**Stiner's Pneumatic Extractor** will extract goods in the open width. This machine will extract from 25 to 40 yards per minute and once through the machine does the work. I have one of my extractors now running over 30 yards per minute in one of the most progressive mills where only the best machinery can be used to manufacture their fine goods.

**Stiner's Twentieth Century Dewing Machines** are running in some of the best mills where foreign and domestic machines have failed to give satisfaction. If you are interested in sponging machines for wetting out goods in the open width to properly shrink them, I can build you a machine that will do this work.

If you are interested in the line of machinery which I build, please write for cut and further particulars. Address all correspondence to

**FRANK STINER,**

Lawrence, Mass., U. S. A.

Shop, Island St.

*Inventor and Builder of the Best Finishing Machinery.*

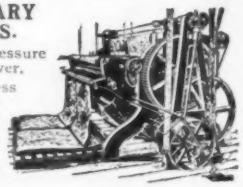
**New and Second-Hand Cloth Presses**

LATEST MILLER ROTARY STEAM CLOTH PRESS.

Patent Flexible Steel Bed. Pressure automatically appplied by power.

1 6/4 double bed second-hand press
1 8/4 " " " "
1 6/4 single " " " "

at a bargain.



**Miller Press & Machine Co.**

WOONSOCKET, R. I.

**E. FEARON & CO.**

**Engineers and Machinists,**

*110 OXFORD STREET, PHILADELPHIA*

Engines, Pumps, Boilers, and Electrical Machinery. | Textile Dyeing, Drying and Finishing Machinery.

Repairing and Jobbing Promptly Attended to.

Both 'Phones.

**EUREKA FIRE HOSE**

Is Acknowledged to be

**THE BEST FIRE HOSE MADE**

For use in

**Cotton Mills, Woolen Mills and Factories.**

(Trade Mark)

Seamless Woven and Rubber lined EUREKA COTTON HOSE. "TROJAN" brand, has no equal. Send for circular and Testimonials.

Awarded Gold Medal at the St. Louis Exposition, 1904.

**EUREKA FIRE HOSE CO.,**

13 BARCLAY STREET, NEW YORK, N. Y.

**TEXTILE MANUFACTURERS ARE INVITED**

To ask about our new brand of

**Undoubtedly Standard.** **U. S. ROOFING** **Unquestionable Superiority.**

THE LINCOLN WATERPROOF CLOTH CO., Bound Brook, N. J.

# DINSMORE

## Mill Sewing Machines

**No. 9—Portable Foot-Power Rotary Sewing Machine.**

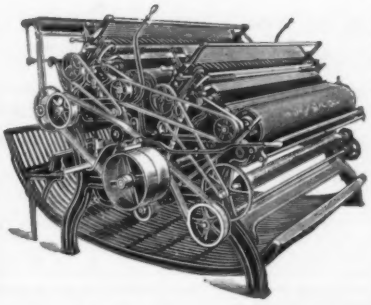
It is especially adapted for use in Cotton and Woollen Mills, Bleacheries, Print Works at the Printing Machines, in Dye Works, Cloth Rooms, at the Fulling Mill, Shears, Calendars, Gigs, Drying Machines, etc., or any of the different finishing processes in textile mills.

Manufactured by the

**DINSMORE MANUFACTURING CO.,**

**Salem, Mass., U. S. A.**

# DOUBLE SHEAR



The Finest Shearing Machine in the World. Get into line. Use Double Shears. We will take your Single Shears in trade. Our representative can interest you. He will call at a word from you.

**Parks & Woolson Machine Co.** Springfield, Vermont.

# NORTH CHELMSFORD MACH. CO.

SUCCESSORS TO SILVER & GAY CO.

Manufacturers of

Automatic BALL WINDERS, adapted to all kinds of Twines, Silks and Floss. QUILLERS and REELS. Also SPECIAL MACHINERY from DRAWINGS or PATTERNS.

Repairing, Turning and Refluting Worsted.

Spinning and Drawing Rolls a Specialty.

**NORTH CHELMSFORD, MASS.**

# LOWELL CRAYONS FOR MILL USE.

Quality To Meet All Requirements.

Address for Samples and Prices,

**LOWELL CRAYON CO., Lowell, Mass.**

Original Makers.

Established 1844.

## BENJ. BUCKLEY'S SON,

(WM. J. BUCKLEY) **Gun Mill, Patterson, N. J.**

**Manufacturer of all kinds of SPINDLES, FLYERS, RINGS, TUBES, CAPS, etc.,** for Cotton, Silk, Flax, Woolen and Worsted **Machinery.**

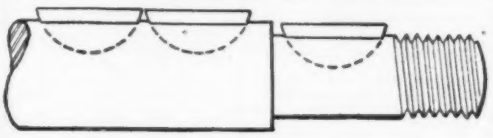
Roving Spindles and Flyers a Specialty. Light Forgings.

REPAIRING OF ALL KINDS.

## Key Seating Attachment

FOR

## Whiton Gear Cutter



We offer an attachment for use with our Gear Cutting Machine, to cut key seats for the Woodruff System of Keying. Write for description, circulars and price.

**THE D. E. WHITON MACHINE CO.,**

**19 Oak Street, New London, Conn.**

# ANYTHING

Entire Outfits for New Mills, or small and odd items that that you don't know just where to obtain, can be found at the

**AMERICAN SUPPLY CO.,**
**PROVIDENCE, R. I.**

# in Mill Supplies.

**E. L. TEBBETS & CO.,**
**Locke's Mills, Me.**

Thread and Silk **SPOOLS** of any description.

We are located in the best white birch region. Our work and prices seem to satisfy the most particular customers. We can give any finish desired. Estimates furnished on samples submitted.

## The Best That Money Can Buy

**SPINNING RINGS.**
**TWISTER RINGS.**
**RING HOLDERS.**
**TRAVELER CUPS.**
**SILK RINGS.**
**TRAVELER CLEANERS.**

Correspondence Solicited.

**WHITINSVILLE SPINNING RING CO.,**
**WHITINSVILLE, MASS., U. S. A.**

G TRADE MARK

## Cabled Twine Harnesses

**ARE STRONGEST**

The cabled twine which we use is made especially for loom harnesses. It is twisted hard enough to secure the greatest strength and slack enough to absorb the stock and varnish. It is stronger and takes in more varnish than ordinary twine and it is because of this strength and capacity to absorb the stock that harnesses made from cabled twine wear longer than those made of any other.

**GARLAND MFG. CO.,**
**Saco, Me.**
Formerly Loom Picker Co., Biddeford, Me.

## J. K. SHRYOCK,

PERFECT RIGID CLOTH BOARD TRADE MARK S

19 South 7th St.,
PHILA., PA.
MANUFACTURER OF

**Paper Cloth Boards For Textile Mills**

All weights and sizes furnished by thousand, ton or carload. Prompt delivery assured. Samples and prices on request.

## The J. L. N. Smythe Co.

Leather Fibre S Manilla

**23-25 So. 4th St., Phila.**

**Paper Specialties,**

**Fibres, Colored Textile Wrappers, Manillas, Silk Papers, and Tissues, Corrugated Cloth Boards.**

E. DIXON. Established 1876. F. M. DIXON.

**DIXON LUBRICATING SADDLE CO., Bristol, R. I.**

SOLE MANUFACTURERS OF

**Dixon's Patent Locking Saddles and Stirrups.**

The weight can be taken off and put on to the middle rolls, without stopping your frames, when long staple cotton is used.

THE STIRRUP IS ALWAYS IN PLACE.
NO BENT STIRRUP RESTING ON ROLLS.

Manufacturers of all kinds of Saddles, Stirrups and Levers. Send for Samples and Prices.

**Spinners' Supplies in general.**

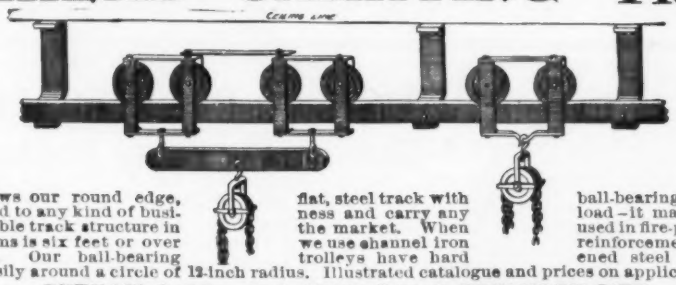
**ELIJAH ASHWORTH,**

—MANUFACTURER OF—

**Card Clothing of Every Description**

HENRY ASHWORTH, Agt. FALL RIVER, MASS.

**OVERHEAD CARRYING TRACK.**



The above shows our round edge, flat, steel track with ball-bearing trolleys, both single and double, adapted to any kind of business and most durable track structure in the market. When load—it makes the least expenspan between beams is six feet or over we use channel iron sive used in fire-proof buildings where medi te hangers. Our ball-bearing trolleys have hard reinforcement with short interened steel centres and are so made as to turn easily around a circle of 12-inch radius. Illustrated catalogue and prices on application.

PUTNAM & CO., 244 Water Street, NEW YORK CITY.

**JACOB WALDER,** Paterson, N. J.

Sole Manufacturer in the United States of

**Brass and Steel MAILS**

Liberal Discount to Dealers.

**RICHARDSON BROTHERS,**

*542 PEARL STREET, NEW YORK,*

Manufacturers and Dealers

**Fine Colored Textile Wrappers, Silk Papers & Specialties,**

for Finishers of

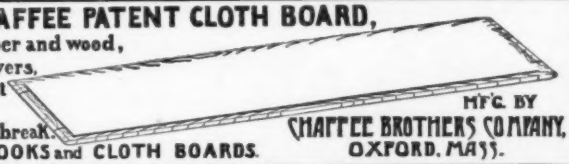
COTTON, SILK AND WOOL GOODS. "ROYAL" ENGLISH PRESS PAPERS.

Patent ROUND EDGE CLOTH BOARDS.

**SAVE Their Cost In Freight.**

**THE CHAFFEE PATENT CLOTH BOARD,**

Made of paper and wood,
Needs no covers,
Will not split or warp;
Not liable to break.



MFG. BY CHAFFEE BROTHERS COMPANY, OXFORD, MASS.

BOX SHOOKS and CLOTH BOARDS.

**Clean LIGHT Strong**

**Shaw's "Victor" Travelers**

Manufactured by

**VICTOR SHAW RING TRAVELER CO.**

Incorporated 1899.

23 Sabin Street, PROVIDENCE, R. I.

# ELEVATORS.

*OUR FACILITIES INCLUDE*

A modern factory, competent engineering talent, a local agent and a force of skilled mechanics in Boston, New York, Philadelphia, Baltimore and Atlanta.

We offer you the best Passenger and Freight Elevators (Hydraulic, Electric, Belt or Hand Power). We guarantee right prices for the apparatus furnished. Prompt attention to inquiries and prompt shipments.

**Morse, Williams & Co.,**

**Philadelphia**

**Boston** **New York** **Baltimore** **Atlanta**

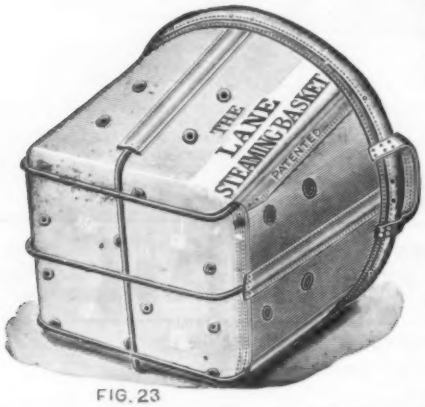



FIG. 23

## The Lane Patent Steel Frame Canvas Steaming Basket.

***MADE WITH OR WITHOUT WOODEN SHOES, AS REQUIRED.***

Adapted to withstand the severe test of steaming better than any other basket, as it is constructed of such materials, and in such a manner as to be unaffected by steam, heat or moisture.

The steadily increasing demand for the Lane Patent Steaming Basket demonstrates the truth of our claims.

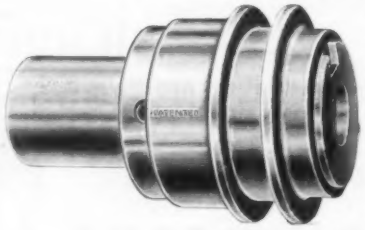
**W. T. LANE & BROTHER,**

Manufacturers,

Formerly located at Port Chester, N. Y. **Poughkeepsie, N. Y.**

## THE JOHNSON FRICTION CLUTCHES

SINGLE AND DOUBLE

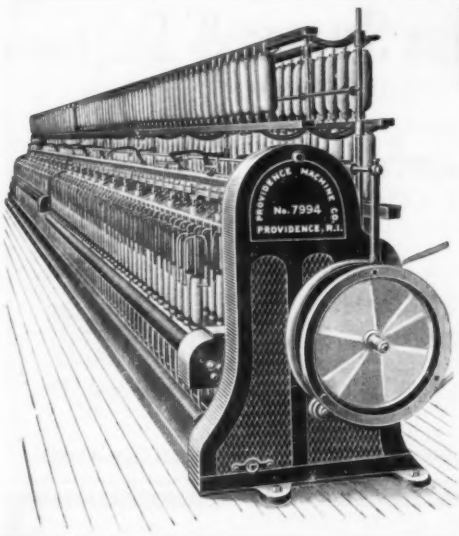


### For Machines, Countershafts, Lineshafts, Etc.

They are especially adapted for Textile Machinery. Very compact, powerful and neat, having a perfectly smooth surface eliminating the possibility of accidents. They can be instantly adjusted, as required, by one screw. Operate easily and work perfectly at any speed. They are being used by many of the leading manufacturers who endorse them in the highest terms.

**Write for Catalogue.**

**THE CARLYLE JOHNSON MACHINE CO., - Hartford, Conn., U. S. A.**




# Providence Machine Co.

Manufacturers of

## Improved Cotton Roving Frames

## Improved Worsted Roving Frames

564 Eddy St., - - PROVIDENCE, R. I.

## Vulcan Fibre Roving Can.

BODY—Vulcanized Fibre. SIDE SEAM—Riveted with Patented Clinched Rivets. RINGS—Tinned Steel, Brazed Joints, Curled Edges. BOTTOM—IXXX. Tin Star Corrugation; Fastened without the use of nails or screws, will not crack, warp or shrink and cannot come out. FINISH—Coated inside and out with moisture proof coating, handsome and smooth. WEIGHT—About one-half pound per inch diameter. SIZE—All cans to any exact size, perfectly round and true. DURABILITY—Superior to any other can.

Also Manufacturers of

HILL'S IXXX TIN AND GALVANIZED IRON DYE HOUSE CAN.

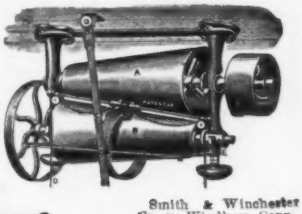
James Hill Manufacturing Co.,

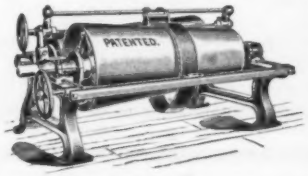
*PROVIDENCE, R. I.*

## EVANS' FRICTION CONES.

Eight Thousand Sets in Operation in This Country and Europe.

A partial list of manufacturers who have Evans' Friction Cone Pulleys in operation, transmitting from ONE TO FORTY HORSEPOWER: National Biscuit Co., Richmond, Ind., 300 sets. Merrimack Mfg. Co., Lowell, Mass. 20 sets. Arnold Print Works, No. Adams, Mass., 11 sets. John & James Dobson, Philadelphia, Pa., 34 sets. Stinson Bros., Philadelphia, Pa., 40 sets. Frederic J. Falding, New York, N.Y., 20 sets.



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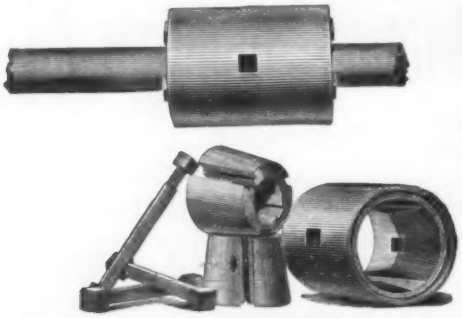

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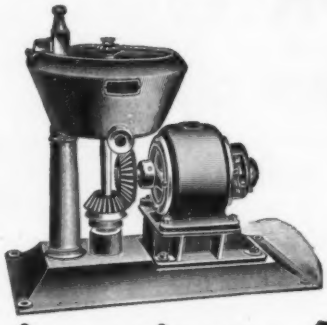

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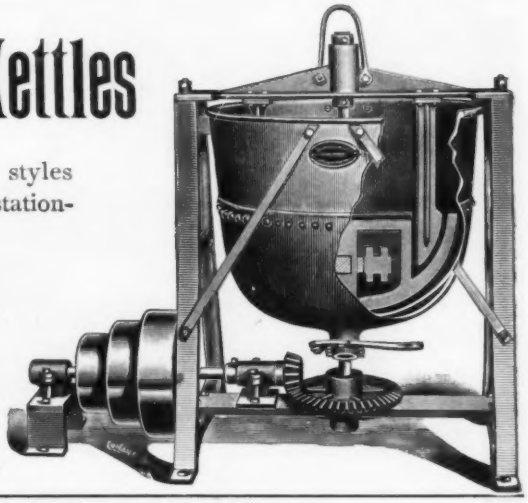

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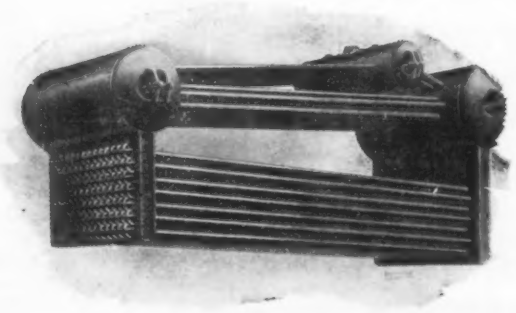

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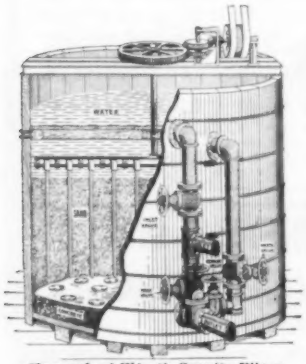

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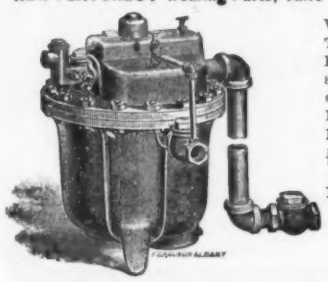

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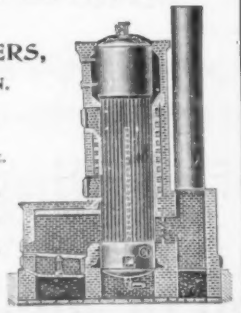

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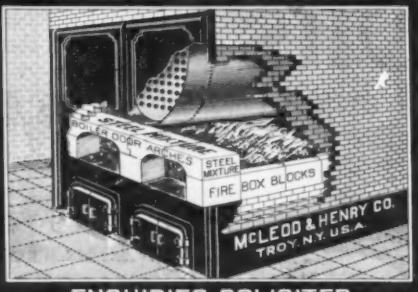


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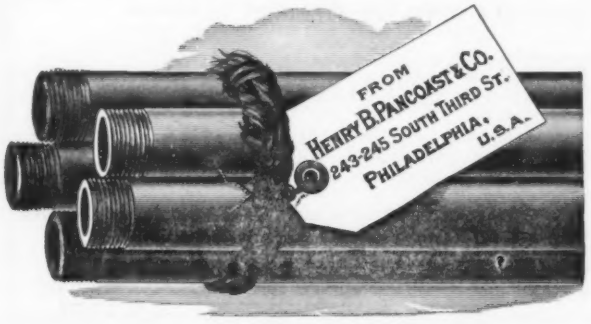


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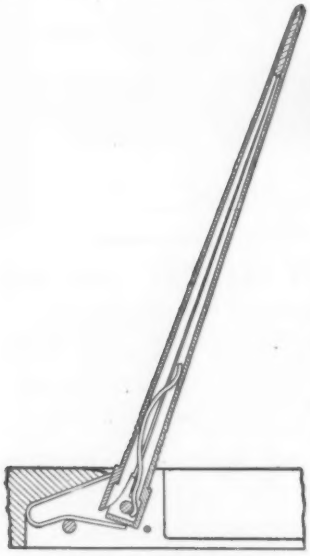

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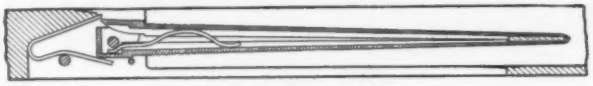

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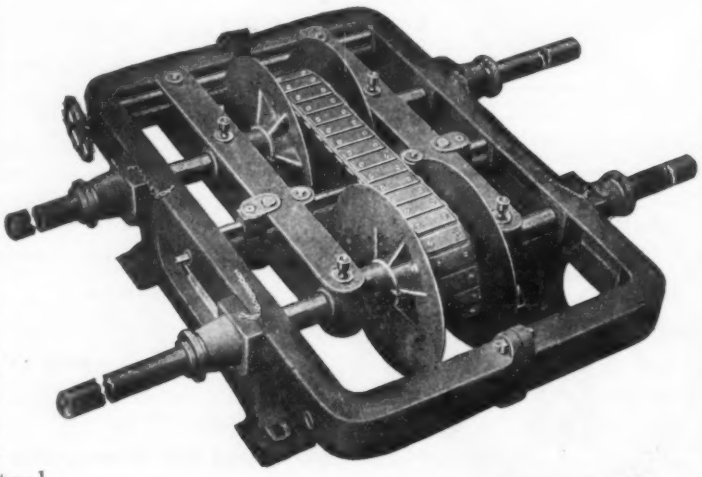

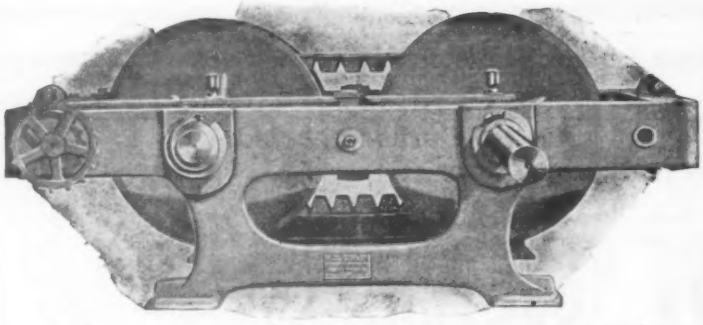

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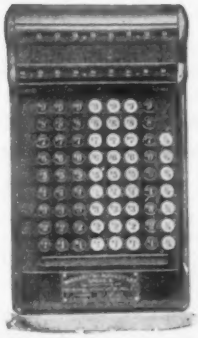

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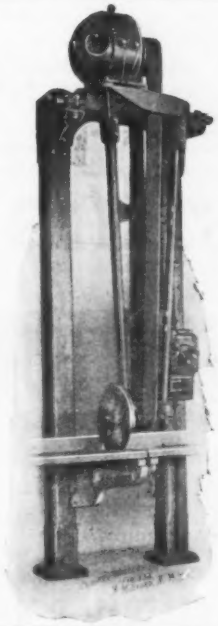

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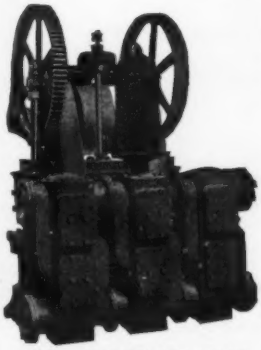

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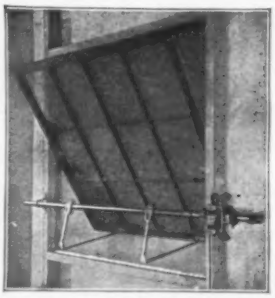

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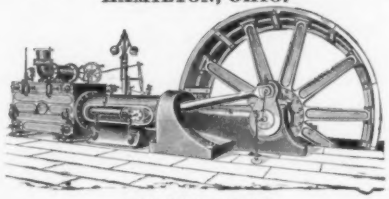

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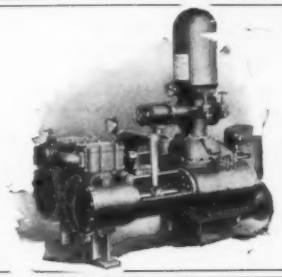

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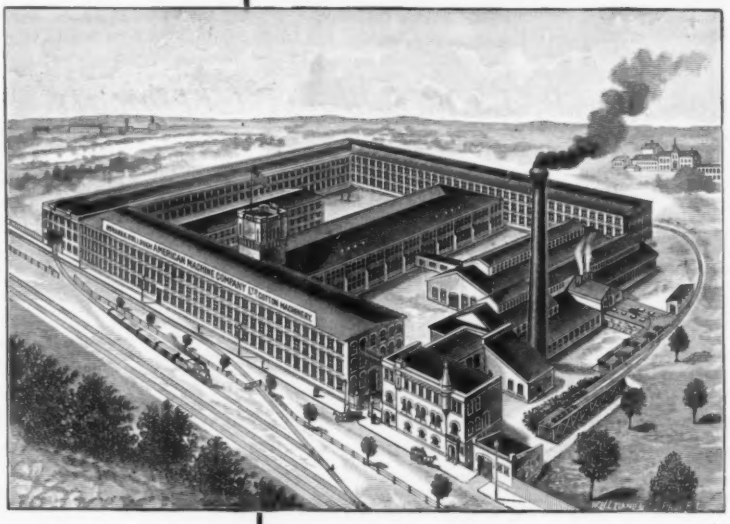

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PART IV. Manufacturer's Selling Agents and Dry Goods Commission Merchants, giving the name and address of concern, character of goods handled, different departments, with managers, list of manufacturing clothiers, and suit and cloak manufacturers, giving specialties and buyers names. A list of city offices of textile mills is given.

PART V. Dealers and Brokers in raw materials and stock, including wool and shoddy dealers and brokers, cotton dealers and brokers, factors and buyers and wholesale rag dealers making a specialty of textile interests.

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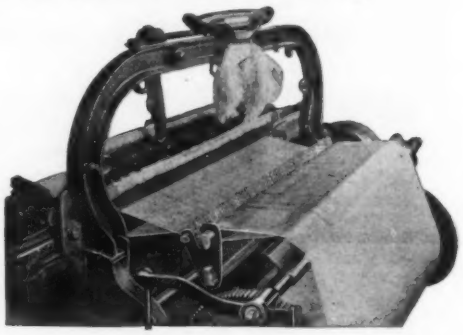

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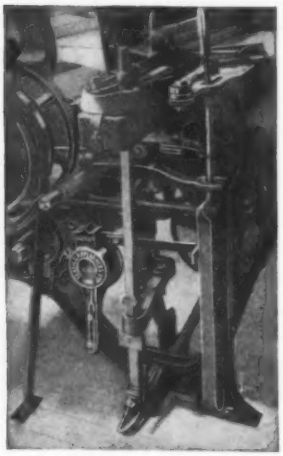

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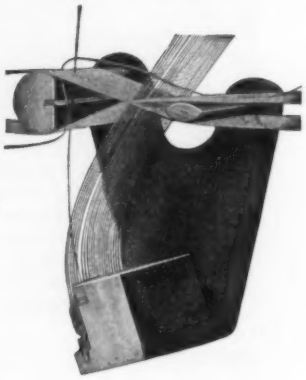

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VOL. 28. (NEW SERIES.) DECEMBER, 1904 No. 3.

# Monthly Comment.

### The Price of Cotton.

The decline of cotton to 8 1/2 cents for middling uplands, practically coincident with the publication of the Government report, presents a new and to many manufacturers an embarrassing problem. With a mill stocked with ten cent cotton the decline necessitates another adjustment downwards under conditions that mean a shrinkage in the value of the stock on hand. It is, however, very easy to overestimate the importance of such a sudden decline as has just occurred. A glance at our graphic chart of cotton prices demonstrates this fact without further comment. It is the general trend of values, not the panic stricken action of speculators, that vitally interests the cotton trade. It is not the guesses of this man or that woman, nor the careful approximation of a Government bureau that creates the trend. Prices are controlled by the law of supply and demand. The supply of cotton is limited and uncertain. The demand is certain and unlimited in its possibilities of increase with the development of the human race.

The empty cotton storehouses of the world that for more than two years have been waiting for American cotton, the idle mills that could not obtain a supply of raw material, the scarcity of labor in the cotton fields, all these factors carry a warning against indulging in any expectation of 8 cent cotton as a permanent condition.

### The Philippine Tariff.

The War Department has distributed a schedule of the proposed revision of the Philippine customs tariff and invited suggestions and recommendations with a view to amendments before it is finally adopted. All communications on this subject should be addressed to the Bureau of Insular Affairs, War Department, Washington, D. C., and we presume that a copy of the schedule will be mailed to any one interested in the subject. The rates, as proposed by the War Department, do not provide for any material changes in the tariff on textile products, but it is generally understood that Congress will take up the question of adjusting the tariff conditions between the United States and the Philippines at the approaching session.

We have frequently called attention to the anomalous condition of the trade in textiles between the United States and the Philippines. For the 11 months ending May, 1904, the cotton goods imported into the Philippines were valued at $4,433,507, of which only 6 per cent. came from the United States.

Great Britain supplied 46 per cent., Spain 16 per cent. and the remaining 32 per cent. were divided among the British East Indies, Switzerland, Germany, Japan, France and other countries.

The regulation which has been in force for some time providing that the export duty on hemp shall be remitted on shipments to the United States, diverted a large share of the hemp trade to this country to the loss of Great Britain, and there is no reason to doubt that a reduction of the duties on textiles imported from the United States into the Philippines would place this already large and promising market in the control of American manufacturers who are in great need of wider markets for their products.

The schedule begins with general rules, the first of which relates to textiles. The rule for determining the number of threads in a woven fabric is given as follows:

Rule 1. Number of threads and its ascertainment.—By the number of threads in a textile shall, unless otherwise stipulated, be meant the totality of all the threads comprised in the warp and weft in a square of six millimeters. The warp of textiles is to be considered as the totality of the threads which lie longitudinally, whether they form the foundation of the same, or whether they have been added in order to form patterns or give the stuff more body. The weft shall be considered the totality of the threads which cross the warp of the textile, and combine the same conditions of helping to form patterns or to add to the body of the stuff, even though such threads be cut or show a want of continuity. In order to determine for customs treatment of textiles, the number of threads and the proportion in which the threads subject to the highest duty are found in the textile, the instrument known as the "thread counter" shall be employed.

Should there be a doubt as to the ascertainment of the number of threads in a textile, owing to the textile being more closely woven in some parts than in others, the most closely woven part and the most loosely woven part shall be taken, and the average number of threads resulting from the two shall serve as a basis for levying duty.

When the nature of the tissue permits it, the thread shall always be counted on the obverse side of the stuff.

In all woolly or melton-like textiles, and generally in all textiles in which the threads have become indistinct by carding or fulling, the threads shall be counted on the reverse side of the stuff by rasping or burning the hair when necessary.

In exceptional cases, where after these operations the ascertainment of the number of threads remains doubtful, a sufficient part of the textiles shall be unraveled.

Should this likewise be impossible, as, for instance, in case of ready-made articles, the textile shall be subject to the highest duty of the group to which it belongs, and should the textile be mixed, it shall be dutiable according to the class in which the most highly taxed material entering into the mixture is comprised.

Of the woven cloths imported into the Philippines for the 11 months ending May, 1904, 64.4 per cent. come from Great Britain and the United States, where the inch is used in gauging the set of fabrics. The adoption of the English system of measurement for the Philippine tariff would thus bring the practice of the Philippine custom house into agreement with that of the principal exporting countries. Moreover, a length of 6 millimeters (approximately 1/4 inch) is too short to give a fair average of the set of the woven goods. This has led the French Government to adopt a distance of 5 centimeters (2 inches) for this purpose. The English inch, however, is well suited for gauging the set of textile fabrics, being long enough to give a fair average.

The revised schedule provides that cotton yarn and threads less than 20 centimeters (8 inches) in length shall be considered as the waste of spun yarn. The Philippine rule for determining the size of spun yarn is rather interesting:

A meter of No. 1 cotton yarn of a single thread weighs 59 centigrams. To ascertain the number to which a cotton yarn corresponds any number of the meters thereof may be taken. The number of meters so taken must be multiplied by 59 and the product thereof must be divided by the number of centigrams that the tested length of yarn weighs. The quotient so obtained will be the number of the tested yarn, if of not more than one thread. If the yarn is of more than one thread, the quotient must be multiplied by the number of threads, and to give the proper number 7 per cent. must be added if not dyed, or 10 per cent. if dyed.

The foregoing paragraph shows that owing to the general use of the English cotton system throughout the world the Spanish Government was compelled to base its cotton yarn schedule on the English standard. The English count indicates the number of 840-yard skeins per pound. This is equivalent to the number of meters per .5905+ gram. The exact equivalent cannot be expressed, as English and metric standards are incommensurable. In order to simplify the equivalent the Spanish Government adopted the incorrect value, .59 gram as the

basis of the English count, and was then forced, when testing the size of imported yarn, to employ the very inconvenient method described above, and which is in fact the use of the English system by means of metric equivalents.

The chief product of the Philippine Islands at the present time is Manila hemp, the exports of this material during the 11 months ending May, 1904, being valued at $19,611,202, which is over 71 per cent. of the total exports from the archipelago for the same period. And here again we find that commerce is embarrassed by the conditions of weights and measures. Locally, that is with the planters, and in transactions between dealers, hemp is bought and sold by the picul (137 1/2 Spanish pounds) and by the arroba (25 Spanish pounds). When the hemp reaches the custom house these weights are converted into metric equivalents for the custom house records, and when it reaches England and the United States, as nearly all of it does, the weights are reduced to English pounds. The substitution of the English system would thus simplify transactions in hemp, particularly as the English and Spanish pounds are practically identical, 140 English pounds being equal to 137 1/2 Spanish pounds. At present the weight of hemp is first given in Spanish pounds, then reduced to the metric system, and finally to the English standards, all this labor being apparently for the purpose of enabling custom house clerks to reduce the weight to tons of 1,000 kilos each.

An additional reason why the English standards should be adopted for textiles in the Philippines is the fact that the textile tariffs of China and Japan are based on the English system. All but eight of the tariff rates on textile products imported into China are assessed by the English standards, the eight exceptions being due to the use of the Chinese catty. The Japanese tariff shows a similar use of the English system.

In view of these facts it would seem to be advisable to adopt the Anglo-American or English system of weights and measures for the Philippine tariff. This suggestion does not include any disturbance of the local Philippine standards, such as the picul, the arroba, the vara, etc., which are so firmly fixed in the life of the Philippine people that a sudden change is impossible and any sudden disturbance of which would be a great hardship to them.

### Testing Mill Supplies.

In the discussion of the practice of bribing mill employees to give unfair preference to the bribers' goods, the most reasonable and promising remedy that has been suggested is the organization of an efficient purchasing system involving regular and thorough scientific tests to determine the value of all materials supplied to the mill. This subject of graft has attracted much more attention abroad, especially in Germany, than in this country. The Manufacturers' Associations in Aachen and Forst, and the Industrial Society of Werdau have adopted a standard contract between its members and supply dealers by which, the latter agree not to influence employees in any way. The suggestion has been made that the mployers have frequent heart to heart talks on the bribery question with their employees, and make contracts with them after consultation with a lawyer by which the employee may be summarily discharged and subject to legal proceedings if he should accept any consideration whatever from a supply house. Another suggestion is that higher salaries be paid to those holding responsible positions in the mill. The latter plan is based on the assumption that German overseers are underpaid at present.

Statutes have been suggested punishing both briber and bribed by fine and imprisonment, and one excited writer states that "the bribing of employees is one of the causes for the present industrial retrogression of Germany." No plan has been proposed that promises so reasonable and efficient a remedy as that of having all supplies purchased by the employer and subjected to scientific tests whose results the employees are expected to accept or disprove by indisputable evidence.

Such a system not only makes the securing of business by bribery of employees so difficult as to be practically impossible, but shows the value and properties of the materials used in manufacturing. Such information would alone warrant the system of tests proposed.

The advantage is well illustrated by the case cited by Dr. C. B. Dudley, chemist of the Pennsylvania Railroad, in an address before the American Society for Testing Materials. A portion of this address appears in another part of this issue.

It is for the interest not only of the purchaser, but also of the selling house, mill employees and traveling salesmen that this practice of securing business by bribery should be stopped. Recently we learned of a case which illustrates the dishonest and demoralizing character of this system of graft, and with the idea that it will tend to restrict the practice we give the particulars which are substantiated by the original letters in our possession. An American textile manufacturer received from a soap dealer a letter from which we make the following extract:

We have been in the soap business for many years and have some customers who commenced the use of our goods when we started. We believe the only right way to sell goods is to let them speak for themselves and tell their own story of merit by actual test under the buyer's eye. It is not what we or other soap men claim for our goods that establishes their value to you, but what the goods will actually do. We sell everybody strictly on merit, and on this basis we have the honor of supplying many very large mills. We do not send salesmen out as we want to avoid all possibility of complications that might arise through their adopting the methods of some of our competitors and meeting the users of soap, so our soap is its own silent salesman and tells its own practical and unbiased story. We take great pleasure in sending you today by express prepaid and free of all charge a box containing 30 pounds of our soap and respectfully ask you to give it a careful test.

Under the same date the selling house sent a copy of the foregoing letter to the overseer at the same mill. Before the sample lot of soap reached the mill and began to pose as "its own silent salesman and to tell its own practical and unbiased story," a representative of the selling house had called on the overseer and offered to allow him one cent per pound on all soap he (the overseer) would get his employers to use. The overseer told the man that all the purchasing was done at the office, and asked him to go there and sell his soap. The reply to this was that by doing so the overseer would lose his "speck on the deal." The overseer promptly reported this interview to his employers. In a few days the overseer received the following letter from another representative of the selling house:

Ulysses writes me that you and he agree that it would be a good thing for us to send your folks a free sample of our best soap with a good letter explaining all about it, so as to let you see just how good it is, so we send it today and write them a letter about it, speaking of it as 30 pounds. I got the shipping clerk to sneak in 10 pounds extra without letting them know of it here in the office, so as to give you a chance to make a very fine report on it, calling it 30 pounds the same as we do in the letter. You will really find it much the best you ever used. We are selling hundreds of thousands of pounds of it every week. If they conclude after hearing your report to continue using ours, you will hear from me with what Ulysses promised, and and you will get it every time long before the goods get there. You stick to me and I will stick to you and it will be a great gain for you. Never let on to a soul that you ever heard of me or of any one else from this concern. Don't lose my address. Please send back the enclosed copy of our letter which I got the typewriter to make for me, as they would take my head off if they dreamed that I sent it out. I enclose a stamped envelope to return it in. Please write me how the trial turns out after you have tried it and tell me what you hear them say and what you think the chance is of you and I doing business together.

Such is the story of an attempt to bribe that failed. It has created a prejudice in the mind of this purchaser against this selling house and has made future business extremely improbable. The full details of this story, with names and dates will travel through the trade and create a similar prejudice in the minds of many other manufacturers. The story thus illustrates the bad policy of graft, even from the salesman's point of view, and also shows, how, when the methods are successful, the purchaser is defrauded and the salesman and overseer degraded.

## Imported Dress Goods.

A feature of our foreign trade during the last seven years has been the increasing quantity of dress goods imported from abroad. While the present imports of this class of merchandise is but approximately one-half of the amount before the passage of the present tariff law, still the steady increase which is noted from year to year, promises soon to bring the total to that under the Wilson bill.

As will be seen from the accompanying table, the dress goods imported in 1890 were valued at $24,000,000. This included the

excess brought in previous to the passage of the McKinley bill. For the succeeding three years under that law the dress goods imports were valued at $18,000,000, $16,000,000, and $16,000,000 respectively. The next year, 1894, the value dropped to $8,500,000, owing to the prospect of a low tariff going into effect. After this event had occurred the value of the dress goods imports jumped to $16,000,000, $22,000,000 and $17,000,000 in 1895, 1896 and 1897 respectively. These were the dark years under a low tariff.

Happily, this flood of foreign goods was checked by the passage of the Dingley bill in 1897. The effect was immediately apparent. The imports dropped to $6,000,000. Since then they have been gradually increasing until they reached $8,200,000 for the year ending June 30, 1904. The extension of this trade in the face of the specific and ad valorem duties of the Dingley bill is a striking proof of the power of competition possessed by foreign manufacturers, due to a combination of cheap labor and raw material with a high degree of skill in the mixture and manipulation of textile materials.

In this issue we publish a letter from our special correspondent in England, in which he refers to the English exports of dress goods to America, and shows a number of fabrics which were shipped during the week in which his letter was written, and which at best have been on the American market but a few weeks. The samples of these goods can be seen at our Boston office. For the information of those who are unable to avail themselves of this opportunity we publish with the English letter the results of the analysis of two of the fabrics.

EXPORTS AND IMPORTS OF MANUFACTURED WOOLENS.

Value in units of $100,000.

| Year Ending June 30 | Exports — Value. | | | | | | Imports — Value. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Carpets. | Dress Goods. | Flannels and Blankets. | Apparel. | Other. | Total. | Carpets. | Cloths. | Dress Goods. | Shawls. | Clothing | Knit Goods. | Other. | Total. |
| 1890 | .067 | .. | .409 | 3.179 | .719 | 4.374 | 7.5 | 161.4 | 242.0 | 10.1 | 18.4 | 19.8 | 66.2 | 525.4 |
| 1891 | .184 | .. | .265 | 4.240 | .502 | 5.191 | 13.7 | 120.3 | 182.4 | 7.2 | 18.6 | 12.5 | 39.7 | 394.4 |
| 1892 | .093 | .. | .244 | 2.689 | .649 | 3.675 | 12.9 | 127.6 | 164.7 | 3.5 | 14.8 | 11.6 | 12.1 | 347.2 |
| 1893 | .115 | .. | .242 | 2.224 | .679 | 3.260 | 15.8 | 151.2 | 161.8 | 2.8 | 11.7 | 14.1 | 15.0 | 372.4 |
| 1894 | 2.500 | .. | .387 | 3.172 | 1.685 | 7.744 | 9.6 | 67.6 | 85.8 | 1.6 | 8.6 | 10.0 | 7.2 | 190.4 |
| 1895 | 1.610 | .. | .498 | 3.161 | 1.432 | 6.701 | 13.6 | 183.0 | 144.0 | 2.0 | 10.0 | 9.4 | 11.8 | 353.8 |
| 1896 | 2.252 | .. | .370 | 3.693 | 2.860 | 9.135 | 8.9 | 218.9 | 199.3 | 4.5 | 13.0 | 25.4 | 27.4 | 497.4 |
| 1897 | 1.895 | .. | .573 | 3.858 | 3.150 | 9.476 | 7.8 | 170.1 | 167.9 | 4.6 | 9.8 | 25.3 | 27.0 | 412.5 |
| 1898 | 1.612 | .414 | .474 | 4.290 | 4.074 | 10.89 | 17.9 | 89.6 | 60.4 | .4 | 7.6 | 3.9 | 9.6 | 189.4 |
| 1899 | .811 | .169 | .427 | 5.388 | 3.879 | 10.47 | 17.6 | 39.1 | 59.1 | .5 | 8.3 | 6.3 | 5.6 | 136.5 |
| 1900 | 1.150 | .244 | 1.002 | 5.654 | 4.485 | 12.54 | 27.5 | 51.3 | 58.7 | .8 | 9.9 | 5.0 | 6.3 | 159.5 |
| 1901 | 1.051 | .082 | 1.230 | 8.060 | 5.005 | 15.43 | 27.0 | 39.6 | 53.7 | .8 | 11.7 | 4 1 | 5.3 | 142.2 |
| 1902 | .867 | .070 | .8-3 | 8.521 | 4.780 | 15.12 | 34.4 | 48.0 | 64.0 | .5 | 13.3 | 5.7 | 5.2 | 171.1 |
| 1903 | .579 | .0 4 | .481 | 12.908 | 3.187 | 17.22 | 37.5 | 48.8 | 75.1 | .5 | 19.2 | 6.7 | 4.7 | 195.4 |
| 1904 | .509 | .078 | .105 | 14.577 | 3.663 | 19.87 | 27.9 | 41.5 | 82.0 | .5 | 13.0 | 5.1 | 5.2 | 175.2 |

## The Numbering of Silk Yarn.

Interest in the attempt to unify the numbering of yarn has recently been revived by the following communication from the Japanese Government to the State Department at Washington:

Legation of Japan, Washington,
October 25th, 1904.

Honorable John Hay,
Secretary of State,
Washington, D. C.

Sir: Under instructions from His Imperial Majesty's Minister for Foreign Affairs, I have the honor to inform you that the Imperial Government have decided to adopt, from January 1st, 1905, the resolutions adopted by the International Congress held at Paris in 1900 on the unification of the numbering of silk thread yarns and further to request your good offices in giving wide publicity to the matter in order that the manufacturers and others interested in silk business may be fully advised thereof.

I beg leave to add in this connection that the Imperial Government have arrived at the above decision, having ascertained from the reply of the United States Government to the French Government on the subject, a copy of which you were good enough to furnish me, that despite the impossibility of adopting an obligatory schedule of yarn sizes to be followed by the United States manufacturers without a Special Act of Congress, the sentiment of the textile manufacturing bodies is favorable to the adoption of the International yarn measurements.

Accept, Mr. Secretary, the renewed assurances of my highest consideration.

K. Takahira.

At the present time there is practically but one standard for numbering raw silk. By it

the count or number of the silk indicates the number of Paris grains, called deniers, in the weight of 400 aunes of yarn. Slight variations in the weight of the denier have given rise to what are known as the French, Italian and Turin systems of numbering by deniers. These variations are so slight as to be negligible and are ordinarily ignored by the silk trade in the United States, where the French system is the standard. A 10 denier silk by the French system is equal to 9.95 denier Turin, and 10.05 denier Italian. Owing to the natural variations in the size of the silk as spun by the worm, a variation within two deniers is allowed by the trade, the size of 11 denier silk, for example, being written 10-12 denier. The variations between the three systems can thus be ignored, as they are insignificant in themselves or when compared with the natural variations in size. The unification of the numbering of silk yarn is, therefore, and has long been *un fait accompli* on the denier-aune basis.

This system, based on 400 aunes, was originally very convenient, but has been made exceedingly awkward by reduction to other standards of weight and measure. Thus, when reduced to the metric system, the denier count indicates either the number of units of .05313 grams in the weight of 476 meters, or the number of demi-decigrammes per 450 meters. If reduced to the English system, it becomes the number of grains per 634 1/2 yards. This system is used for thrown as well as for raw silk on the Continent, but in English speaking countries the more convenient dram-1,000 yard system is used for thrown silk.

Strenuous efforts have been made for many years to substitute a more convenient metric basis for the denier system. The various congresses at Vienna, Brussels, Turin and Paris have adopted systems covering a wide range, including grammes per 10,000,000 meters, demi-decigrammes per 500 meters and grammes per 500 meters. The last named system was made the legal French standard by the law of 1866. All in vain. The silk trade has continued to use the denier system, and in 1900 the Paris Congress, recognizing that the mountain would not come to Mahomet, adopted the denier system as the international standard, by the following resolution:

> Whereas, The official French numbering for silk, defined by the law of 1866, has never been used in the silk trade, and,
>
> Whereas, The only systems in use are the Lyons, used in the United States, France and Japan; the Italian, used in most of the other silk countries, notably in Germany, Austria, Italy and Switzerland, and,
>
> Whereas, It is important while seeking unification on metric and decimal bases to take into account the customs of the different silk markets, and,
>
> Whereas, The difference between the two above-named systems is negligible, therefore,
>
> Resolved, That the Italian system be adopted by all nations as the International standard.

The members of the Congress evidently realized the real character of such resolutions. Three years later, on Aprill 22, 1903, the permanent committee of that Congress adopted a fixed weight system of numbering silk based on the kilometers per kilogram, by which the number decreases as the size increases.

The action of Japan is, therefore, simply a repetition of the farce at the Paris Congress of 1900, which has already been repudiated by the Permanent Committee of that Congress, and can have no effect on the present method of numbering yarn. It does not even propose any. It means no more than a resolution that when two yards of cloth weigh two pounds one yard of the same cloth shall weigh sixteen ounces. A very sensible statement, but one that most people would consider rather superfluous.

The statement in the note of the Japanese Minister, that the textile manufacturing bodies of the United States are favorable to the adoption of international yarn measurements, is open to various interpretations. In its literal sense it is probably correct, although no American textile association has taken any formal action in the matter. The important question to decide is the particular basis on which unification is to be made. We have seen how effectively the silk trade has unified silk numbering on the denier basis without the aid of legal enactments, resolutions of manufacturing bodies and yarn congresses or diplomatic negotiations, and nearly as complete a uniformity has been reached by the same means for cotton yarn on a basis of 840 yards per pound.

# Seasonable Fabrics.

MEN'S WEAR.

At no time in the last decade have men's wear manufacturers and agents been so optimistic as now. It is recognized that the price of raw material made an advance in woolens inevitable. Another contributing factor to this end is the general depletion of stocks among jobbers, manufacturers and retailers. Under the latter circumstances large purchases are certain, and the advance in price seems likely to be if anything a trifle greater than can be ascribed solely to increased cost of material.

Complaints of late seasonable offerings are heard, but this is met by the statement that business conditions made such action advisable. The fact is, there is a dual reason for the delay: First is the marked growth of fancy worsteds in favor, and second the disposition of others to wait until the American Woolen Company is ready to announce its offerings. This company will show overcoatings Dec. 15 and suitings January 15.

Samples of a few fabrics have already been shown, at prices indicating a 5 to 10 per cent. advance. It seems probable that there will be an average advance of from 10 to 15 cents, the greatest increase being in the higher grades.

Duplicate orders are fairly satisfactory, although extreme conservatism among buyers is apparent, except in mercerized goods, which are in lessening demand.

Two or three lines of woolens, 60 cent to 90 cent staple goods, have been offered at from three to seven cents advance. Greeley, Cushman & Record offered a line of Oakland overcoatings and cross dyes at 77 1/2 and 87 cents. Faulkner, Page & Co. announce an advance of 1 cent to 1 1/2 cents on Bound Brook beavers and 2 1/2 cents on chinchillas.

Evidence is apparent of improved demand for overcoatings for spot delivery. Overcoat houses are expecting to place business for stock goods during December and January, this contributing also to the lateness of the season. On all orders full market prices are paid for stock that represents excellent property and holders prefer carrying goods over to sacrificing.

The trade is predicting an advance in December and January on woolens. This, too, in face of the fact that the trend appears to be toward fancy worsteds. That the manufacturers recognize this will be shown in the December and January offerings. Patterns in both woolens and fancy worsteds will be bright and attractive.

DRESS GOODS.

Activity prevails in dress goods. The steady increase in the popularity of mohairs has centered attention on that fabric, the sales of the 55 cent grade being especially noticeable. There is every indication of a mohair season. Novelties in the new season offerings are in plaids and stripes. In colors brown is holding its own, but there is a decided tendency toward dark green, which occupies a prominent place in all new lines. Indications are that eventually it will be the prevailing color.

Mills are working on duplicate orders, and this will carry them over to the pending heavy weight season. The cutting trade is placing small orders for cloakings and suitings. Additional orders for spring goods are coming in. The latter weeks of November showed a surprising activity, while prices have been strictly maintained.

This maintenance is due to the strength of the raw material market. Manufacturers believe that any goods carried over this year will show full value in 1905. Recent purchases in cloth have shown an improvement on twilled weave fabrics. Rain cloths in medium and heavy weights have also been active.

Orders for spring show an improvement in the demand for foreign dress goods, especially henriettas, fancy worsteds and plain goods. Imported goods are certain to advance in proportion to American increases, for the foreign manufacturer has also to pay higher prices for his raw material.

### SILK GOODS.

Fancy silks are in growing demand. In the coming season effects, a neat black and white check seems likely to predominate. This will become more evident about March 1.

Jobbers say sales ahead are greater in volume than for many seasons past. One firm is reported as having refused an order for 100 pieces of 50 cent taffetas for spring, giving as a reason that they were sold out so far ahead that they could accept no further business in this line. It is extremely difficult to place an order for taffetas for early delivery.

Selling agents and wholesalers generally report the receipt of satisfactory orders for January delivery in other lines. Several mills are full up for months ahead. The Clifton Mills are not accepting any large orders for their Rajah and Burlington silks for delivery before late in February. Jobbers complain that the majority of mills will not give prompt delivery of duplicate fall orders except on condition that spring deliveries can be delayed beyond the date stipulated.

Orders for velveteens are more numerous and larger than a year ago. Offerings show little if any change in fancies. The largest sales are in staple browns, blues and blacks, while dark green is growing in favor. The American Velvet Company is making no effort in new novelties, not even in waistings, where the embroiderette velveteens first offered the trade last spring are still leading.

In silk velvets there is a steadily increasing demand, principally for the $1.25 grade. The feature of jobbing orders is a decided strengthening in the calls for higher grades. The broadtail effect is maintaining its popularity, and no effort has been made to offer either a rival or substitute.

In wash grades voiles and suiting effects lead. Woven outsell printed organdies in both silk and cotton.

### COTTON GOODS.

Sales of the better grades of ginghams are satisfactory, and many lines have been sold well ahead at 8 1/2 to 9 cents. Reorders of ginghams in both standard and fine dress grades are numerous. Sales of the latter are larger than at any corresponding period since 1899. Silk ginghams bid fair to sell far ahead of recent years.

Woodward, Baldwin & Co. brought out a large line of the Brogon mills Anderson flannels, bourettes, at 7 1/2 cents. The first offering was made Dec. 5.

The print market is stationary at the end of November, despite the reduction in prices, the cause being the decline in raw material. The change in prices was discounted, as it was agreed that quotations must be made at a point that would enable counter sales at 5 cents. Despite the reduction, the market continues strong. Lawrence & Co. announce a reduction on Merrimack indigoes and Cadet fancy prints to 4 1/2 cents, and Merrimack shirtings to 4 1/4 cents.

Bliss, Fabyan & Co. have reduced indigoes 1/2 cent and blacks and whites, grays and shirtings 1/2 cent. The Algonquin Printing Company announces a similar reduction.

Harding, Whitman & Co. note reductions in William Simpson & Son's prints as follows: Plain blacks, 4 1/2 cents; blacks and whites, 4 1/2 cents; silver grays, 4 1/2 cents; shepherd plaids, 4 1/2 cents.

### LININGS.

In linings the better grades of mercerized and allied fabrics furnish the principal business. Orders are held pending the settlement of the question as to whether, as seems probable, the prevailing mode in women's dresses will require the use of any greater amount of lining than the present styles demand. For this reason few orders are being placed.

Fully mercerized goods are selling on spring account and in plain colors and in fancy effects for both linings and shirt waist purposes. There is a fair demand for other finishes in silk and satin. Silk and silk warp linings are firm and in good demand.

In silesias orders are chiefly for the medium and lower qualities at firm prices. Percalines are steady, special finishes being in chief demand.

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The stocking frame was invented by William Lee of Nottingham in 1589 and continued to be used in its original form for nearly two hundred years.

## THE RUSSIAN TEXTILE INDUSTRY.

*BY A FOREIGNER IN RUSSIA.*

I shall endeavor to give an idea in this article of the state of Russian industry and of the textile industry in particular, especially before the war and the influence that this struggle will have upon industrial forces in this country.

### A REFORM NECESSARY.

Before speaking of industrial conditions I will say a few words on the political situation in this great country which includes one seventh of the surface of the earth without counting Manchuria whose fate is now in the balance. This immense territory has been favored by a continued industrial and commercial development, which has been due in large measure to Minister Witte. Although the death rate in the severe Russian climate is considerable, the birth rate is far in excess of the death rate, consequently the population is increasing. Moreover, southern Russia has a rather warm temperature in spring time and if the country people would give more attention to the newly born infants the Russian population would increase much more rapidly. Alas, however, I have met the heads of many families who have admitted that they have lost ten out of every twelve children that were born. If the general prosperity should increase in proportion to the population and the people should become better instructed, there is no doubt that an era of marvelous development awaits this country. Without speaking of education it is evident that the material well-being of the Russian people is not improving. This is where reform is necessary. Poor from time immemorial, they still remain poverty-stricken and miserable.

A kind of communism in the country districts whose results are negative or positively injurious is the strongest refutation one can obtain of communistic theories. No rivalry, no prosperity is possible under this system. The proof of this is found on every hand. Misery reigns supreme in the villages and certain provinces are in a permanent state of famine. In 1902 the Russian government alone expended nearly $10,000,000 in aiding its famine stricken subjects. In addition to this there was a considerable amount contributed by private individuals. The complaints among the country people were numerous and bitter before the war, and after having fostered the infant industries and after having listened to so many flatteries and hailed as the creator of industrial Russia, the celebrated minister I have named was actually discredited. The great error, which was in no wise imputable to M. Witte, is the ancient tradition on which is founded the hope of maintaining communistic organization. An extreme protection does the rest.

All the industries suffered before the war. Manufacturers and merchants complained as bitterly as did the country people and preachers of the villages. There was a crisis in the metal working trades with profound depression which caused heavy failures. There was also a crisis in the cotton, woolen and silk industries, in a word, a general depression of business followed the prosperous period under Witte.

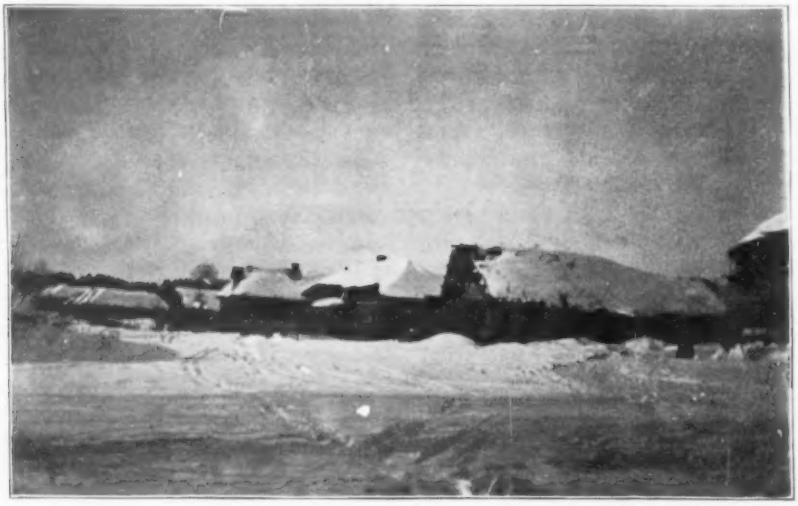
I have already indicated the remedy which consists in bettering the condition of the country people by encouraging small land holders or sobstveniki, as they are called here, in place of the ruinous policy of the cultivation of the land in common; also in developing the instruction of the people and thus encouraging industrious and temperate habits. The cotton and woolen industries would be especially benefited by such a reform. In spite of the cold climate, cottonades form the greater part of the clothing material used in Russia. Encouraged and stimulated for a long time by protective duties that gradually became prohibitive, the Russian textile industries have become established in various parts of the country, the five principal manufacturing centers being as follows: 1. Moscow, the greatest and most important, where all kinds of yarns and fabrics are manufactured; 2. Pologne, with Lodz and Varsovie, of equal importance; 3. St. Petersburg; 4. Riga; 5. Tver, where the principal industry is that of cotton manufacturing. The principal markets where the goods are sold are as follows in the order of their importance:

Moscow, St. Petersburg, Ninji Novgorod, Varsovie, Karkoff, Lodz, Odessa, Tiflis, Rostoff, etc., including the annual fairs at different places throughout the country.

Russia has had the advantage of being able to supply its own requirements in respect to textile raw material, of which the principal are linen and hemp. The flax districts are very extensive around Riga, St. Petersburg, Louga, Bejetsky, Jarapol, Mologin, Archangel, Pernau, Novgorod, Kama, Siberiennes, etc. Wool is also raised in large quantities and the consumption is rapidly increasing. Mohair is grown in southern Russia. Silk and cotton come from the Caucasus and central Asia.

at Lodz and Moscow obtains large quantities of yarn from that city. There are but two important woolen yarn mills at Moscow; there are, however, 116 textile mills making woolen, cotton and silk fabrics, the annual product having reached fully $20,000,000 before the war. A number of these mills are small affairs, operating hand looms, but this form of industry is gradually disappearing.

A few of the mills, such as the Malutine and the Prokorofski Trokgoruse, are immense establishments, the annual production of each amounting to $3,000,000. The Girand and Moussy, with a production of from $600,000 to $1,200,000 each, are the principal silk mills. The Michaeloff mill stands at the



A RUSSIAN MILL VILLAGE IN WINTER.

Moscow is the economic capital of Russia and Transsiberia with all its Asiatic ramifications. To Moscow come the buyers and sellers from all parts of the vast empire. Nevertheless in recent years Pologne has developed as an industrial center, the reason being its proximity to the coast and to Germany and other countries that furnish the raw material.

Wages are higher at Moscow and consequently Lodz can manufacture at a lower cost. The commercial routes all converge at Moscow, however, and all the large manufacturers have branch offices there. The carding and spinning industry is important

head of the woolen establishments, having an annual production of $1,500,000.

The present war is bearing heavily upon the Russian textile industry on account of loss of men and the heavy drain upon the finances of the country. Night work has been suspended entirely and the regular holidays are uniformly extended. Many mills are idle and there have been numerous failures at Moscow and other centres.

Industrial Russia, although sustained by foreign capital, has thus far pursued the policy of isolation. The excessive pride of the Russian people, leading to an exclusion resembling that of the Chinese, has been the

greatest bulwark of the protectionist policy. Foreigners who invade Russian markets exhibit a certain degree of audacity in proving that no country in this age of steam can separate itself from the rest of the world. The Germans have been conspicuous in this foreign invasion of industrial Russia. Russia is indeed a rich field for colonization by Germans and involves no corresponding obligations on the part of Germany.

Russia possesses many wealthy capitalists who are timid, and large numbers of workmen who are successful and industrious, but very ignorant. Even before the war there was a marked tendency among the middle and upper classes in favor of reform in social conditions. The working classes, however, which form the great majority, are with the Government. It is a common error to assume that the Russian Government does not interest itself in the welfare of the working people. The Russain manufacturers often find that there is too much governmental interference in this respect. Nowhere else do the large manufacturers provide more for their employees in the way of libraries and other educational facilities. The maintenance of these institutions by the manufacturers is required by law. In addition to schools and libraries the manufacturers are also called upon to provide infirmaries and hospitals for their employees.

Ignorance and drunkenness are the great afflictions of the people. Almost unconsciously the Russian workman listens to new theories which are exploited in secret by agitators. This was the cause of the great strikes in 1902 and 1903. With their primitive ideas and the tendency to return to a state of barbarism, outrages on foreigners are very frequent. The massacre of Belgian workmen in southern Russia and the many murders of foreign superintendents in Russian mills are proofs of this barbarous spirit, which is not confined to isolated districts, but extends into all parts of the country and into all classes of society. Every foreigner established in Russia must count on the enmity of the people. There is a growing tendency of the population toward the villages and cities. The people are deserting the farms to engage in various occupations in the large centers.

The cities and towns are far behind those of many other countries. Moscow, for example, has not yet completed a system of water works; the street pavements are in an abominable condition, but there is a growing tendency toward improvement. The rising generation exhibits a strong desire for improvement, both in education and in apparel. The acquisition of new provinces does not mean a proportionate increase in domestic trade for Russia. The great distances, lack of transportation, the high tariff and the inefficient hand labor prevent the domestic industry from competing with that of other and more advanced countries. The present depression, much greater than that of preceding years, is without doubt due to the present war with Japan. Russia produces too much and at too high a cost.

## A FIBRE CLEANER WANTED.

The American Consul at Tamatave, Madagascar has received a communication from J. W. Pyddoke, Andovoranto, Madagascar, who desires to be put in correspondence with manufacturers of machines for stripping the fibres of the raphia palm. He states that no machines for doing this work have yet been built, neither are there any for stripping the fibres of aloe and the cassava.

A law recently promulgated went into effect in Madagascar on August last imposing severe restrictions on the sale of any native products adulterated or badly prepared, particularly referring to rubber, vegetable fibre and raphia.

The raphia palm grows both on the coast and in the mountainous interior of the island. Dr. Morris states that the leaves average 25 feet in length. The fibre is derived from the cuticle of the leaves, which are peeled on both sides. The thin strips of the fibrous material thus obtained are then divided into narrow strips by a comb according to the purpose for which they are to be used. The preparation of raphia is one of the most extensive industries in Madagascar. The men cut the leaves in the forest and bring them home for the women to complete the work. The fibre is cured the same day it is stripped. It appears as flat straw colored strips about

one-half to one-fourth inches wide and from three to four feet long. It is capable of being divided into fine threads and is used for delicately plaited goods, hats, mats for covering floors and wrapping up goods. The loose strips are extensively used by gardeners and nurserymen.

## TESTING COMMERCIAL PRODUCTS.

BY DR. C. B. DUDLEY,
*Chemist for Pennsylvania Railroad.*

It is now perhaps twenty-five years ago that a certain special car happened to fall under the eye of one of the officers responsible for the maintenance of equipment who observed that the varnish on the outside seemed to have perished almost completely, and that the integrity of the painting underneath was in consequence seriously threatened. The car was sent to the paint shop for special examination. The shop reported that the car had been varnished at so recent a date that ordinary wear would not warrant its present condition, and that the loss of varnish was probably due to excess of zeal on the part of the car cleaners. The matter was referred to the foreman of the car cleaners, who reported that they had given the car a pretty good treatment, but that really they could not be held responsible for any better results with the soap that was furnished to them. In order not to be set aside and diverted from his efforts to secure efficiency, by the customary attempt on the part of subordinates who are called on account to transfer the blame to someone else, the officer above referred to asked for a sample of the very soap used, and a partly used cake was furnished and sent to the laboratory.

Now, ordinary cleaning soap, as is well known, is a chemical compound of the various acids characteristic of vegetable or animal fats, with either soda or potash or both. The combination is brought about by the aid of heat, the fats being mixed with the soda or potash in water solution, and the resulting product always containing more or less water as a necessary concomitant of the manufacture. Potash, being more expensive than soda, is less often used. But soda soaps are softer than potash soaps, and, as is well known, the physical condition of a soap as to hardness is an important element in its successful use. Moreover, the nature of the fats used has a most important influence on the hardness of the soap. The soft animal fats whose characteristic fat-acid is undoubtedly largely oleic, when saponified with soda, give a soft mushy soap which is uneconomical to use, is less easy to handle both in manufacture and transportation, and is often unsalable in appearance. These objectionable characteristics are largely increased by the practise, so common among soap makers, of adding a percentage of rosin to the fat. Tallow, which contains a considerable percentage of stearic acid, makes a much better soap. But tallow is more expensive than the soft fats and rosin. Accordingly, soap makers have sought for devices that would harden soaps made from soft fats and rosin, and it has been found that an excess of alkali, and especially a percentage of carbonate of soda added toward the last and thoroughly mixed with the soap before it cools and hardens produces the result desired.

Returning now to the partly used cake of soap. A careful analysis of this sample showed that it contained, in addition to the alkali necessary to combine with the fat, about 3 1/2 per cent. of free caustic soda, and over 7 per cent. of carbonate of soda. It will thus be seen that the water solution of this soap which the men were using to clean the cars with was in reality a weak lye, containing quite an amount of sodium carbonate. But both lye and carbonate of soda in solution readily dissolve varnish; even the combined alkali of a normal soap dissolves varnish to a certain extent, but very much more slowly than the free caustic or carbonated alkali, even though the latter may be in very dilute solution. It is evident that the contention of the men in this case had a foundation of fact, and while it is recognized that the manipulation—that is, the method of using the soap solution—is a most important element in the problem, it is unquestioned that in the hands of the ordinary car cleaner, such a soap as has been described will result in a much more rapid

destruction of the varnish than if a normal soap were used. This incident led to the formation of specifications for soap in which the amounts of free caustic and carbonated alkali were limited, and no similar case of very rapid varnish deterioration has since been noticed.

Now this case has not been cited to show that the producer had any desire to ignore or set aside any of the rights or even desires of the consumer, or to obtain for himself any undue, ulterior advantage at the expense of the consumer. In reality, the producer was furnishing more detergent power per pound of soap than is characteristic of the normal article, since both free caustic and carbonated alkali are much stronger in detergent power per pound than the combined alkali of soaps. There is apparently no reasonable ground for an attempt to hold the soap maker responsible for the injury to the varnish, and we cannot help regarding this episode as illustrating "The Influence of Specifications on Commercial Products," in this: that they tell the producer what the consumer wants. It is not to be supposed that the producer will know all the uses to which the consumer will apply his product, and without co-operation on the part of the latter, or, as we have so many times urged, without the two working together, the producer may with perfect honesty make and furnish the wrong product.

## HOW TO GET THE JOB.

Every ambitious and intelligent mill man outgrows the past and has an innate longing to do better work in his present position by securing such results as will bring him a larger salary and advancement to a higher station. If, perchance, he has reached the highest position in the gift of his present employer, and has outgrown the present capacity of his plant and perceives no signs of enlargement, he has a right to look for a new field of labor suited to his ambition. There are a large number of men who are amply capable of filling larger and more responsible positions with great credit to themselves and increased profit to the companies who would be fortunate in securing their services. But, alas! there is another class that is equally anxious for advancement and seeking the same opportunity with as much force as the former class, and when given a chance prove to be failures. This is what makes it so hard for the worthy man to prove his claims. To get the job is a serious task. When a position is thrown open the rush of applicants is so great, and the pressing of their suits so earnest, that it is often with great difficulty that the most competent men secure an audience or even get a hearing or a reply. It often happens than an incompetent man may have had more schooling, and by his polished application may use more convincing terms and secure more favorable attention. Often a thoroughly practical man is so busy at his present task that he hastily sends a message on a scrap of paper saying he is the right man. The receiver throws this message into the waste basket before it is half read through, not realizing that this man may prove greatly superior to the more diplomatic job-seeker.

One of these expert job-seekers once called to see a prosperous friend who was superintendent of a large mill, and as the superintendent escorted his visitor leisurely through his great plant, the visitor thought to himself: This superintendent has a snap; and he finally ventured to ask the question. "What is the hardest thing you have ever had to do in connection with this plant?" To which the genial superintendent replied: "Well, I'll tell you, the hardest thing I ever had to do in connection with this plant was to get the job."

There is more truth than fiction about this answer. To many practical men the work of straightening out the mill is very easy, compared to the severe strain of trying to get the job they are well fitted to fill.

The reader will despair if the writer closes this article without some practical suggestions that will aid the honest seeker of a larger job. In the first place, to avoid disappointment, do not look for nor expect advancement at home or elsewhere until you feel entirely worthy and fully competent to fill the higher position. No matter how well a man has done, more and better work will be expected of him in the higher sphere. The next thing for a man to do when his ambition is worked

up to that pitch that he wants to rise is to make the job that he now has do a good deal of talking. Don't talk too much yourself, but make your results talk. It stands to reason that if a man is capable of filling a better position he should be able to fill the one job he has next to perfection. Therefore, take a deep interest in your present charge. Redouble your efforts to increase production and quality and to reduce cost. Get your name up by piling up production, by your excellent management of details, and keep up this steady gait without wavering. Let your wishes be known in a moderate way. Disclose your object to a few friends here and there in a quiet way. Tell them that you are not working like a Trojan for glory, but you are working for promotion. Register your name with some good bureau. That talk about having a pull with the directors, or of having financial influence does not cut ice. Men are what corporations are looking for, and if you are the man they want, pull and money backing don't figure in the proposition at all.

When you hear of an opening write and ask for it. Tell them you want the work and are capable of carrying out your contract. Don't tell them you know it all. Be honest in your statements and prove them. If you are out of a job try to meet them and have a plain interview, carefully giving honest particulars. To perjure one's self into a position will prove of no value in the end. If you hold a good position, say so, and that you are giving satisfaction, but want to rise. If possible, interview your present employer and elicit his assistance. He ought to be your best reference and recommend you most highly. Write a plain letter. State your experience fairly, be brief and to the point. Use good conventional business paper. This method goes further in getting the job than anything else. Try it for yourself and see the result.

OVERSEER.

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The oldest known design for any textile fabric is the "burd alisander."

The first attempt at sericulture in America was made by Samuel Whitmarsh in Pennsylvania in 1838, but the experiment was a failure.

## WEIGHTS AND MEASURES USED IN MEXICO.

*BY F. J. BEGG.*

The weights and measures in use in Mexico are rather confusing, owing no doubt to the large percentage of foreign business houses in the country which try to carry on trade with the weights and measures of their own country.

One measure only is in universal use, that of the litre, which is used for all liquids whether oil, milk or pulque, one gallon being approximately equal to 4.54 litres.

In the large dry goods stores which are mostly French houses, the metric system is largely in vogue, 39 1/3 inches being equal to a metre. Other dry goods houses, Mexican and American use it as well, but business is also conducted by the English and Mexican standards. A customer, therefore, in ordering cloth by the yard must ascertain which yard is meant as the vara is also called a yard, being likewise divided into 36 inches or "pulgados."

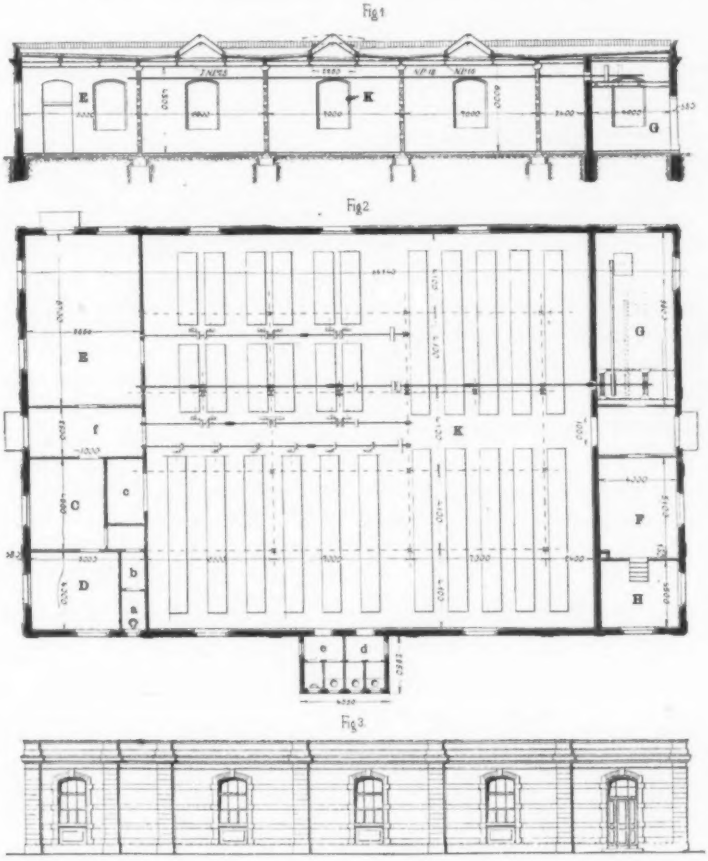
As the Mexican yard or vara has only about 32 1/2 English inches, a buyer in receiving quotations per yard would do well to inquire which standard was used. English and American goods imported in small packages, etc., not in bulk, are sold by the pound, everything else by the kilo and arroba.

In mills jute yarn is numbered the same as in Britain, the number of pounds in a spindle of yarn being taken. In ordering cloth, however, both measures are used, as for example:—50 cuts A, 44 inches cloth. 36 pounds weft, 54 kilos per cut. Bagging, on the other hand, is gauged only by the pound.

A curious thing about the Mexican money is that the names of coins such as dime and quarter are rarely used, though they are the same as U. S. currency with the addition of a 20-cent piece. In their places the reale and values of it are used, a coin now out of use except in name. A reale equals 12 1/2 cents (Mex.) and everything is gauged on that basis, for instance, half reale, quarter reale, six reales (75 cents). A dollar and a quarter is always called ten reales.

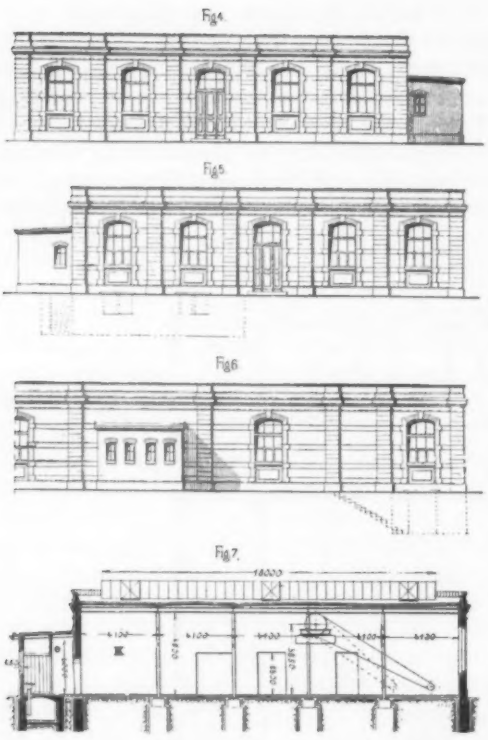
## A YARN TWISTING MILL.

The plan of a small yarn twisting mill recently erected in Switzerland is shown in the accompanying illustrations. The building is divided into three parts. The workroom is in the centre (k). At one end of the workroom are the offices and store room and at the other end are the engine and boiler rooms reserved for the operatives. The main workroom, K, contains five doubling machines by which two or more strands of single yarn are wound on spools preparatory to twisting. The yarn is twisted on eleven twisters of 225 spindles each, making a total of 2,475 twisting spindles. After being twisted the yarn is reeled on twelve machines of 32 spindles each, shown at Fig. 2. The yarn is then




and repair shop. The lower part of the building is lighted by windows and divided by thin partitions as follows: In the centre is a hall, (f), at the right of which are the offices, C and D, the latter serving as a private office. The toilet rooms are at "a" and "b." Adjoining is a washroom and wardrobe connected with the workroom. At the left of the hall (f) is the store room, E, which is connected with the workroom by a special door for the transport of yarn so that the hall is bundled and stored in the room, E, from which it is shipped to fill orders.

The machinery is driven by two electric motors in the room, G. Each motor supplies 40 horse-power, which is transmitted from the main line of shafting to counter shafts by which the machines are driven. Next to the motor room is a hallway behind which is the repair shop, F. The boilers for heating are in the basement under room H. Figs. 1 to 7 show sectional, ground and outside plans




of the mill. (Translated from Uhland's Technische Rundschau by Textile World Record.)

## GETTING GOOD WORK.

*BY GAMALIEL GAUNT.*

It is now a question which mill can produce the best cloth, either plain or fancy. When trade is dull it sometimes seems impossible to please the buyer, and that is also the time when the help think we are asking too much of them. Cloth must be as near perfect as we can get it, and if there is any trouble anywhere it is the duty of each overseer to look into his department, for it is not always in the weave room that cloth is spoiled. A weaver cannot make good cloth if he does not have good yarn.

A lot of cloth was recently sent back to the mill for not being clean, because it was not free from naps or slubs. The cloth was pulled over a black board and showed a surprisingly large number of these naps, many of them seeming almost loose on the surface of the cloth. This showed that the naps had never gone through the rollers of the spinning frame and the question arose, how did they get there? An inspection of the spinning room showed two young men diligently brushing the rails of the spinning frames with short handled brooms, because the stock was of a short staple and not very clean and made a good deal of dirt and waste around the frames. This sweeping process was gone through with four times a day and as the cloud of dust settled down each end from the roller to the guide wire would catch two or three naps and carry them down to the bobbin, and from there they went through the spooling, winding and slashing. Some of the naps came from poor carding and some from poor cotton, so it was necessary to work for better cotton, better carding and better spinning.

Another cause of imperfect cloth is uneven yarn. The yarn may weave well, but it will make the cloth look like the devil. To make good looking cloth it is necessary to have good warp and filling; to make good yarn the stock must come good from the picker. If the pickers are fed evenly they will give an even lap, and if the lap is even in the first place, the work will be even all the way through. The cards must be well ground and stripped—don't try to crowd sticks through them. If the weaver gets good yarn it is up to him to make good cloth.

Sometimes it is asked what can be done to prevent making a thick and thin place every time the loom starts up when on light goods. The best thing is for the overseer to take a few cuts back into the weave room and call the attention of the fixer and weaver to them, and if he talks to them in the right way he will get them stopped to a great extent. The fixer will see to the filling motion and also to the let-off; it is best to have a good rope friction. In one mill weaving 44 by 48 goods it is a rare thing to get thick and thin places, but the overseer gave the weavers to understand that they would be discharged if they let imperfect goods go by. It is not advisable for an overseer to be a bulldog. The man that gets the best results is the man that can speak a kind word to his help, but still let them know that he will take nothing but the best.

# The Textile World Record's Annual Report of Mill Construction for 1904.

The new mills built in the United States in 1904 are a gratifying reflection of the prosperity this country is now enjoying. Although this period of twelve months preceded a presidential year, 290 mills were erected, only 14 per cent. less than in 1903, and more than in any year from 1897 to 1902 inclusive, with the exception of 1900. A larger proportion of new mill construction is found in the knitting branch than in previous years, but with this exception the new mills are well distributed among the different branches. The decrease of 44 mills from last year's record is due to the shrinkage in the cotton, woolen and silk branches; miscellaneous and knitting mills show an increase.

COMPARISON OF SPINDLES IN NEW MILLS (COTTON) FOR THE PAST SEVEN YEARS.

| | 1904 | 1903 | 1902 | 1901 | 1900 | 1899 | 1898 |
|---|---|---|---|---|---|---|---|
| New England | 61,184 | 135,000 | 347,320 | 30,000 | 185,700 | 315,000 | ..... |
| Southern States | 155,472 | 281,752 | 490,256 | 259,360 | 1,109,584 | 669,970 | 158,750 |
| Middle and Western States | ..... | ..... | 25,000 | 2,064 | 11,500 | 78,000 | 7,000 |
| Totals | 216,656 | 416,752 | 862,576 | 291,424 | 1,306,784 | 1,062,970 | 165,750 |

COMPARISON OF NEW MILL CONSTRUCTION FOR PAST SEVEN YEARS.

| | 1904 | 1903 | 1902 | 1901 | 1900 | 1899 | 1898 |
|---|---|---|---|---|---|---|---|
| Cotton | 48 | 81 | 68 | 59 | 171 | 91 | 34 |
| Woolen | 45 | 65 | 46 | 53 | 48 | 49 | 25 |
| Knitting | 111 | 105 | 82 | 93 | 109 | 57 | 46 |
| Silk | 49 | 58 | 45 | 29 | 43 | 32 | 19 |
| Miscellaneous | 37 | 25 | 21 | 21 | 29 | 16 | 10 |
| Totals | 290 | 334 | 262 | 255 | 400 | 245 | 134 |

NEW COTTON MILLS IN 1904.

| South | No. | Spindles | Looms |
|---|---|---|---|
| Alabama | 1 | 11,000 | 4,000 |
| Georgia | 2 | ..... | 200 |
| Louisiana | 1 | ..... | .... |
| Maryland | 2 | 10,000 | 29 |
| Mississippi | 1 | 1,000 | .... |
| North Carolina | 9 | 40,020 | 1,375 |
| South Carolina | 7 | 79,352 | 1,940 |
| Texas | 1 | ..... | .... |
| Virginia | 2 | 9,500 | .... |
| Totals | 26 | 155,472 | 3,535 |
| North | | | |
| Connecticut | 3 | ..... | .... |
| Massachusetts | 5 | 61,184 | 600 |
| New Hampshire | 1 | ..... | .... |
| New Jersey | 1 | ..... | 5 |
| New York | 1 | ..... | 6 |
| Pennsylvania | 9 | ..... | 233 |
| Rhode Island | 2 | ..... | 24 |
| Totals | 22 | 61,184 | 868 |

The South leads in cotton mill construction with 26 mills having 155,472 spindles, as compared with 22 mills and 61,184 spindles in the North. Only 2 of the Northern mills contained spindles, the other 20 being weaving mills. A comparison of the Northern and Southern mill construction for a series of years shows that there is nothing in the 1904 record to indicate a decadence in the Northern industry. Thirty per cent. of the new spindles for the last year were installed in the North as compared with 15 per cent. in 1900.

Of the Southern spindles, nearly 80 per cent. are credited to the Carolinas, showing the tendency of the industry to concentrate within narrow limits. In view of the difficulties in which the cotton industry has been placed during the last few years owing to a readjustment of values in the raw material market, the continued activity in mill construction is conclusive proof of the sound basis upon which the American cotton industry rests.

NEW WOOLEN MILLS.

| | 1904 | | 1903 | 1902 | 1901 |
|---|---|---|---|---|---|
| New England | | | | | |
| Maine | 1 | | | | |
| Massachusetts | 9 | | | | |
| Rhode Island | 2 | | | | |
| | | 12 | | | |
| Middle States | | | | | |
| New Jersey | 1 | | | | |
| Pennsylvania | 23 | | | | |
| | | 24 | | | |
| Western States | | | | | |
| California | 1 | | | | |
| Illinois | 1 | | | | |
| Ohio | 2 | | | | |
| Oregon | 3 | | | | |
| Wisconsin | 1 | | | | |
| | | 8 | | | |
| Southern States | | | | | |
| Virginia | 1 | | | | |
| | | 1 | | | |
| Totals | | 45 | 65 | 46 | 53 |

The woolen industry also shows a decrease in the number of new mills as compared with the preceding year, there being 45 in 1904 as compared with 65 in 1903. Of these new woolen mills 23 or more than half of the total number are found in the state of Pennsylvania. The South is a negligible factor in new woolen mill construction, only one being reported and that from Virginia.

Of the 111 new knitting mills built in 1904, 70 or nearly two-thirds are found in the Middle States, 7 in Maine and the remainder are divided about equally between the West and South. This is an industry which has also had to contend with very trying conditions during the last year, in view of which the ex-

NEW KNITTING MILLS.

| | 1904 | 1903 | 1902 | 1901 |
|---|---|---|---|---|
| **New England** | | | | |
| Maine | 1 | | | |
| Massachusetts | 6 | | | |
| | — 7 | | | |
| **Middle States** | | | | |
| New York | 26 | | | |
| New Jersey | 4 | | | |
| Pennsylvania | 39 | | | |
| Delaware | 1 | | | |
| | — 70 | | | |
| **Western States** | | | | |
| California | 1 | | | |
| Idaho | 1 | | | |
| Illinois | 2 | | | |
| Michigan | 4 | | | |
| Minnesota | 1 | | | |
| Ohio | 1 | | | |
| Utah | 2 | | | |
| Wisconsin | 4 | | | |
| | — 16 | | | |
| **Southern States** | | | | |
| Alabama | 1 | | | |
| Mississippi | 1 | | | |
| North Carolina | 8 | | | |
| South Carolina | 5 | | | |
| Tennessee | 1 | | | |
| Texas | 1 | | | |
| Virginia | 1 | | | |
| | — 18 | | | |
| Totals | 111 | 105 | 82 | 93 |

tensive construction of new mills comes as a gratifying surprise.

The new silk mill construction for 1904 is no exception to the general rule of concentration in New Jersey and Pennsylvania, these two states claiming 39 of the 49 mills. For a

NEW SILK MILLS.

| | 1904 | 1903 | 1902 | 1901 |
|---|---|---|---|---|
| **Connecticut** | | | | |
| Broad silks | 1 | | | |
| Silk throwing | 1 | | | |
| | — 2 | | | |
| **Maryland** | | | | |
| Narrow fabrics | 1 | | | |
| | — 1 | | | |
| **Massachusetts** | | | | |
| Broad silks | 3 | | | |
| | — 3 | | | |
| **New Jersey** | | | | |
| Broad silks | 17 | | | |
| Narrow fabrics | 4 | | | |
| Silk throwing | 1 | | | |
| | — 22 | | | |
| **New York** | | | | |
| Broad silks | 3 | | | |
| Narrow fabrics | 1 | | | |
| | — 4 | | | |
| **Pennsylvania** | | | | |
| Artificial silk | 1 | | | |
| Broad silks | 7 | | | |
| Narrow fabrics | 2 | | | |
| Silk yarn | 1 | | | |
| Silk throwing | 5 | | | |
| Velvets | 1 | | | |
| | — 17 | | | |
| Totals | 49 | 58 | 45 | 29 |

number of years the United States has been the largest consumer of raw silk in the world and the steady growth indicated by this year's report indicates that we shall retain this enviable pre-eminence.

The details regarding the building of miscellaneous mills are shown in the table. There has been a noticeable activity in the construction of linen mills. The other mills are for the manufacture of special fabrics or for carrying on operations accessory to the main branches of the textile industry.

In the list of projected mills we find an additional evidence of the confidence prevailing in business circles. In 1904, 42 new mills were projected as compared with 38 in 1903. Actual mill construction is not as sure an in-

NEW MISCELLANEOUS MILLS.

| | 1904 | 1903 | 1902 | 1901 |
|---|---|---|---|---|
| **California** | | | | |
| Jute | 1 | | | |
| | — 1 | | | |
| **Colorado** | | | | |
| Wool scouring | 1 | | | |
| | — 1 | | | |
| **Illinois** | | | | |
| Dyeing and finishing curtains | 1 | | | |
| | — 1 | | | |
| **Kentucky** | | | | |
| Hemp and tar | 1 | | | |
| | — 1 | | | |
| **Massachusetts** | | | | |
| Braids | 1 | | | |
| Dyeing and finishing | 1 | | | |
| Lacings | 1 | | | |
| Linen | 1 | | | |
| | — 4 | | | |
| **New Jersey** | | | | |
| Dyeing and finishing | 1 | | | |
| | — 1 | | | |
| **New York** | | | | |
| Linen | 1 | | | |
| Trimmings | 1 | | | |
| | — 2 | | | |
| **Oregon** | | | | |
| Flax | 1 | | | |
| | — 1 | | | |
| **Pennsylvania** | | | | |
| Bleaching and finishing | 4 | | | |
| Dyeing | 12 | | | |
| Winding | 1 | | | |
| Warping | 1 | | | |
| | — 18 | | | |
| **Rhode Island** | | | | |
| Dyeing | 1 | | | |
| Finishing | 1 | | | |
| Linen yarn | 1 | | | |
| Flexible tubing | 1 | | | |
| | — 4 | | | |
| **Virginia** | | | | |
| Hosiery finishing | 1 | | | |
| | — 1 | | | |
| **Washington** | | | | |
| Hemp | 1 | | | |
| | — 1 | | | |
| **Wisconsin** | | | | |
| Linen | 1 | | | |
| | — 1 | | | |
| Totals | 37 | 25 | 21 | 21 |

MILLS PROJECTED IN 1904.

| | South | N. E. | Middle | West | Total |
|---|---|---|---|---|---|
| Cotton | 3 | . | . | 1 | 4 |
| Woolen | . | 2 | 3 | 2 | 7 |
| Knitting | 4 | 4 | 14 | 6 | 28 |
| Silk | . | . | 3 | . | 3 |
| Totals | 7 | 6 | 20 | 9 | 42 |

dication of prosperity as is the record of mills projected. After a new mill is well under way operations cannot well be discontinued and for this reason new mills are often completed

MILLS PROJECTED IN 1904 AS COMPARED WITH FOUR PRECEDING YEARS.

| | 1904 | 1903 | 1902 | 1901 | 1900 |
|---|---|---|---|---|---|
| Cotton | 4 | 18 | 29 | 40 | 96 |
| Woolen | 7 | 6 | 7 | 18 | 7 |
| Knitting | 28 | 11 | 9 | 28 | 19 |
| Silk | 3 | 4 | 5 | 9 | 6 |
| Totals | 42 | 38 | 50 | 95 | 128 |

under adverse business conditions. It is different with the projection of new enterprises. Adversity immediately puts an end to plans for new business enterprises and for this reason the increase in the number of mills projected in 1904 as compared with the record of 1903 is a very significant feature of present conditions.

# New Mill Construction During 1904.

EXPLANATION OF ABBREVIATIONS: 12/04=Expect to start December, 1904, etc.; S=Steam; W=Water Power; E=Electricity; D=Dye House.

| NEW COTTON MILLS | Spindles | Looms |
|---|---|---|
| **ALABAMA.** | | |
| Jacksonville. Ide Cotton Mills. J. E. Henry, president; J. W. Hawke, vice-president; Geo. P. Ide, secretary and treasurer. (12/04) | 11,000 | .. |
| **CONNECTICUT.** | | |
| Bristol. Attenborough. Laces and braids for millinery and dress trimmings. Sell direct. (Buy silk, mercerized cotton and artificial silk.) | .. | .. |
| East Killingly. Marcus, M. H. & Bro. (New York). Stair pads, carpet linings, cotton comfortables, etc. (In Whitestone Mills.) | .. | .. |
| South Norwalk. Boese, Peppard & Co. Laces and embroideries. Sell direct. | .. | .. |
| **GEORGIA.** | | |
| Athens. Dozier & Co. Mosquito netting. (E.) (Buy yarn.) | .. | .. |
| Eatonton. Putnam Mills & Power Co. $75,000. Floyd & Co., proprietors; O. B. Nisbet, manager; R. K. Matthews, superintendent. Duck, osnaburgs, sheetings. Sell direct. (W. & S.) (Built new weave shed 146 by 100 feet.) (10/04) | 4,000 | 200 |
| **LOUISIANA.** | | |
| New Orleans. Orleans Batting & Comfort Co. $50,000. W. Isenberg, president; N. N. Isenberg, treasurer. Cotton batting and comforts. (7/04.) | .. | .. |
| **MARYLAND.** | | |
| Baltimore. Hooper, William P. Sons Co. New building, three stories, brick. (Expect to have completed in Dec.) | 10,000 | .. |
| Bank P. O. Elk Art Square Co. $12,000. Thomas A. Carr, president; Jas. M. Roberts, treasurer. Granite art squares and upholstery goods. W. E. Rosenthal, New York, s. agt. (D.) (4/04.) | .. | 20 |
| **MASSACHUSETTS.** | | |
| Boston, Jamaica Plain. Meyer, John C. & Co. New mill started at Bismark & Boylston Sts., making spool cottons and silks. Installed own dyeing and bleaching plant. | .. | .. |
| New Bedford. Beacon Mill. Purchased by Chas. D. Owen and C. O. Dexter. Make special grade cotton goods. Two story addition built to mill and new machinery installed. | .. | .. |
| New Bedford. Kilburn Mill. $600,0000. Edward Kilburn, president; Henry L. Tiffany, treasurer. (New building, 133 by 442 feet, three stories, with engine room 35 by 84 feet and boiler room 40 by 126 feet, under construction.) Fine yarns. 56,000 ring spindles to be installed. | 56,000 | .. |
| Taunton. Watupoa Mills. $200,000 preferred, $50,000 common stock. Wm. B. Edgar, president; Raymond D. Borden, treasurer. | .. | 600 |
| Westville. Westville Spinning Company. $45,000. William L. Walker, president; Henry S. Culver, treasurer; Fred S. Culver, superintendent. Hosiery yarns, 8s to 16s. Catlin & Co., s. agts. (S. & W.) (9/04.) | 5,184 | .. |
| **MISSISSIPPI.** | | |
| Columbus. Columbus Yarn & Cordage Co. $10,000. J. W. Steen, president and treasurer; Ben. N. Love, superintendent and buyer. Yarns, 4s to 30s. Sell direct. (S.) (10/04.) | 1,600 | .. |
| **NEW HAMPSHIRE.** | | |
| Ashland. Donald & Buchan. Tape and webbing. Sell direct. (11/04.) | .. | 5 |
| **NEW JERSEY.** | | |
| Haledon. Haledon Tapestry Co. $50,000. Wm. Robertson, president; Geo. W. Fulton, treasurer. (Succeed Fulton, Smith & Co.) | .. | .. |
| **NEW YORK.** | | |
| Pike. Textile Specialty Co. $100,000. Robert H. Peters, president; L. A. Mason (Buffalo), treasurer and buyer; Chas. E. Perry, superintendent. "Dri-Dide" patented diaper for children. 2 sewing machines. (S. & W.) (Bl.) (11/04.) | .. | 6 |
| **NORTH CAROLINA.** | | |
| Asheville. Elk Mountain Cotton Mill Co. $150,000. Jas. A. Burroughs, president; W. Northup, treasurer; D. G. Devenish, agent; T. A. Lacey, superintendent. Damask bedspreads, etc. W. H. Burgess & Co., s. agts. (E.) (Taken plant formerly run by Wm. Whittam Textile Co.) (1/05.) | .. | 84 |
| Fayetteville. Lakeview Manufacturing Company. $50,000. W. L. Holt, president and treasurer. Yarns, 8s to 20s, warps, skeins, cones and tubes. (Purchased Fayetteville Cotton Mills; built new addition and installed some new machinery, including cards and spinning.) Sell direct. (9/04.) | .. | .. |
| Greensboro. Etowah Mills, Inc. $1,000,000. W. I. Young, president and treasurer; Sam Hird, superintendent. Medium and fine cotton fabrics. (250 looms on "Dobby" work.) (Largely mule spining.) (Expect to be running in spring.) | 8,000 | 750 |
| Haw River. Trolinwood Mfg. Co. $125,000. John A. Trolinger, president; B. S. Robertson, treasurer. Cottonades or pant goods. Com. Export & Com. Co., N. Y., s. agts. (D.) (S.) (Under construction.) (2/05.) | 2,240 | 125 |
| Lenoir. Hudson Cotton Mfg. Co. $125,000. J. L. Nelson, president; J. D. Moore, treasurer; J. O. White, superintendent. Cotton yarns, 20s to 40s. Chas. J. Webb & Co., Phila., s. agts. (S.) | 5,000 | .. |
| Marshall. Capitola Mfg. Co. $300,000. W. D. McLendon, Jr., president; E. N. Clemens, treasurer. 4 to 6 yd. sheetings (probably colored goods later.) (W.) (12/04.) | 15,000 | 500 |
| Newton. Clyde Cotton Mills. $30,000. J. C. Smith, president; R. B. Knox, secretary and treasurer. Hosiery yarns, 16s to 20s. | 3,500 | .. |
| Selma. Selma Cotton Mill. $100,000. N. E. Edgerton, president; R. B. Whitley, treasurer. Hosiery yarns. (1/05.) | 5,280 | .. |
| Shelby. Lily Mill & Power Co. John F. Schenck, president; J. H. Ramsem, secretary and treasurer; W. E. Morton, superintendent. Fine yarns from Sea Island and Egyptian cotton. New building erected, 256 by 80 feet, one and one-half stories. | 5,000 | .. |
| **PENNSYLVANIA.** | | |
| Lehighton. Lehighton Lace Company. (S.) (1/05.) | .. | .. |
| Philadelphia. Germantown Textile Manufacturing Co., 79 Wistar St. Otta Zschamisch, president; Charles F. Fechtman, vice-president; Oscar J. Steidel, secretary and treasurer. Upholstery fabrics, silk, cotton and worsted. (S.) | .. | 8 |
| Philadelphia. Leasher & Rimer. Dale Mill, Gillingham St. Tapestry curtains, table covers and novelties. One winder, one beamer. Sell direct. (10/04.) | .. | 11 |
| Philadelphia. Mellor Bros., 1543-45 Ruan St., Frankford. Tapestry curtains and covers. One winder. Sell direct. | .. | 4 |
| Philadelphia. National Lace Co., Lehigh Ave., above Kensington. Lace curtains. Brooks & Feeley, 141 Fifth Ave., N. Y., s. agts. | .. | .. |
| Wilkesbarre. Doran Lace Manufacturing Co. $100,000. Ambrose West, president; Wm. C. Shepard, vice-president; Geo. J. Stegmaier, treasurer; John W. Doran, secretary and general manager. Irish Point Renaissance, Swiss Point Battenburg Curtains, etc. Wyoming Valley Lace Mfg. Co., N. Y., s. agts. (Bl. & F.) (S. & E.) | .. | 200 |
| Wilkesbarre. Gibbs Manufacturing Co. H. Mattershead, superintendent. Silk and cotton tapes and braids and bindings. Sell direct. (D. & F.) 24 braiders. | .. | 10 |
| Wilkesbarre. Star Lace Co. Alfred Clifford, manager. Valenciennes laces, All Overs, Torchons, etc. (Bl.) (S.) | .. | .. |

Wilkesbarre. Wilkesbarre Embroidery Co., The. $22,500. Fred J. Stegmaier, president; Luke French, vice-president; Maurice Gaertner, secretary and treasurer; Ernest Strubi, manager and superintendent. Fine laces and embroideries. Sell direct. 4 machines. (Bl. & F.) (S.) ..... .. ..

**RHODE ISLAND.**

Barrington. Rhode Island Lace Works. $100,000. Geo. B. Frost, president; Joseph L. Buffum, treasurer; Chas. W. Shepard, manager. Trimming laces. Sell direct. (S.) (1/05.) ..... .. ..

Providence. International Webbing Co. $15,000. C. P. Godfrey, president; G. M. Thurlow, treasurer; C. E. Godfrey, superintendent. Elastic and non-elastic webbing. Sell direct and through commission. (E.) (2/04.) .. 24

**SOUTH CAROLINA.**

Anderson. Gluck Mills. $500,000. R. S. Hill, president and treasurer; G. B. Walton, secretary; J. B. Lotin, superintendent and buyer. Lawns and sateens. Wellington, Sears & Co., N. Y. & Boston, s. agts. (S.).25,600 608

Blacksburg. Whitaker Cotton Mills. $50,000. J. R. Killian, president and general manager; C. M. Smith, treasurer. High grade hosiery yarns, 10s to 40s, also warp yarns. (S.) (To add 2,000 more spindles later.) (Operating plant formerly known as Blacksburg Spinning & Knitting Mill.) 3,000 ..

Columbia. Capital City Mills. Reorganized with capital stock of $100,000. L. W. Parker, president and treasurer; E. W. Robertson, vice-president. ..... .. ..

Greenville. Camperdown Mills. Incorporated with capital stock of $100,000. C. E. Graham, president; Allen J. Graham, treasurer; C. H. Robertson, superintendent. Added 8,400 spindles and 132 looms (for ginghams), giving plant a total now of 10,000 spindles and 432 looms. ..... .. ..

Greenwood. Greenwood Cotton Mill. No. 2 mill. Built with view to doubling later. (1/05.) Equipped with .....10,752 300

Greer's. Victor Manufacturing Company. Increased capital stock $350,000. Equipped new addition, 130 by 430 feet, 4 stories, with 25,000 spindles and 600 looms ..... .. ..

Marion. Marion Manufacturing Co. $100,000. W. Stackhouse, president and treasurer; W. K. Davis, superintendent. Fly yarns, 20s to 30s. (S.) (Under construction.) (2/05) 7,000 ..

**TEXAS.**

West. Brazos Valley Cotton Mill Co. $100,000. T. M. West, president; J. A. West, treasurer; Albert T. Clifton, superintendent. (Operate the West Cotton Mills.) ..... .. ..

**VIRGINIA.**

Emporia. Ashby Cotton Mill Co. $50,000. T. Ashby Blythe (Phila.), president; W. Samuel Goodwyne, vice-president; W. T. Tillar, treasurer; W. N. Brown, general manager. Novelty yarns. (9/04)..... 5,000 ..

Emporia. Emporia Cotton Mill. $100,000. W. Samuel Goodwyne, president; Thos. W. Brown, treasurer, superintendent and buyer. Yarns. (6/04.) ..... 4,500 ..

## NEW WOOLEN MILLS

No. Sets & Width Cds. | Looms

**CALIFORNIA.**

Napa. California Woolen Mills. $10,000. J. D. Ladley, president and superintendent. Quilts, mattresses, etc. Sell direct. (S). (Leased buildings formerly occupied by the Napa Woolen Mills ..... ..

**ILLINOIS.**

Savanna. Pratt, J. H. Ingrain rugs. ..... 4

**MAINE.**

Pittsfield. Lancedale Woolen Company. $50,000. T. G. Lancey, president; H. W. Lancey, treasurer. ..... ..

**MASSACHUSETTS.**

East Douglas. Schuster Woolen Mills. $200,000. W. E. Hayward, president; W. S. Schuster, treasurer. Cotton and woolen yarns. (D) (S & W) ..... ..

Hyde Park. Fairmount Wool Scouring & Mfg. Co. $10,000. W. F. Scott, president and manager; John W. Linnehan, treasurer and secretary. Wool extract and shoddies, also custom carding. 4 pickers; 2 scourers. (Capacity 6,000 lbs. ..... ..

North Adams. Waterhouse & Buffum (of Blackinton). Secured old Eagle Mill. Manufacture high grade worsteds. (10/04.) ..... 70

Pittsfield. Pittsfield Yarn Co. (Davis & Mahoney). Woolen and merino yarns, all sizes. 3,000 spindles. Sell direct. (S) (D) (To make custom yarns as well as commission spinning.) (1/05). ..... 7 ..

Saugus. Saugus Manufacturing Co. $90,000. S. H. Bailey, president; S. H. Bailey, Jr., treasurer; C. A. Auel, agent and buyer. Fine worsted and woolen novelties. Rusch & Co., N. Y., s. agts. (S & W) (D) (Operating the Pranker Mill.) .....11 70

Uxbridge. Uxbridge Worsted Co. C. A. Root, agent and manager. Cotton and worsted goods.. 20

Uxbridge. Vim Woolen Company. Wm. E. Davison, agent and superintendent. Woolens and worsteds. L. Bachmann & Co. s. agts. (E) (5/04). ..... 10

Westboro. Westboro Carpet Co. $100,000. S. Nixon, president; W. J. Hogg, treasurer; Wm. Burwell, superintendent. Wilton velvets and tapestry Brussels carpets. Sell direct. (S) (D) Wm. Hogg, buyer. (New building erected, 250 by 46 feet, two stories, and 182 by 108 feet, one story, for bleach and dye house.) (9/04.)..... ..

## NEW WOOLEN MILLS

No. Sets & Width Cds. | Looms

West Milbury. Crenshaw, Albert. Interested in company to be organized with capital of $12,500 to operate looms and finishing and dyeing in Edwin Hoyle's mill. ..... ..

**NEW JERSEY.**

Passaic. Forstmann-Huffmann Co. $750,000. High grade woolen and worsteds for men's and women's wear. Sell direct, 817-819 B'way, N. Y. (To increase looms to 250.) (Expect to have in operation by new year.) ..... 125

**OHIO.**

Cleveland. Ontario Manufacturing Company. $25,000. Worsted yarns. A. H. Wyatt annd M. A. Mapes, interested. 2 sets drawing machinery; 3 spinning frames; 4 twisting frames; one drum winder; 4 spoolers. ..... ..

Ravenna. Ravenna Worsted Company. $50,000. G. H. Hodgson, president; C. G. Bentley, treasurer; J. W. Wright, superintendent. Worsted yarns (Bradford system), 2/20 to 2/50. 5,000 worsted spindles. Sell direct. (S) (1/05). .. ..... ..

**OREGON.**

Bandon. Bandon Woolen Mills. $40,000. E. H. Dyer, president; C. Y. Lowe, treasurer; R. E. L. Bedillion, agent and buyer. Sell direct. (S) (D) (2/05.) ..... 3 14

North Bend. North Bend Woolen Mills. T. W. Clark, president; Miss Lela Border, secretary; Roy P. Clark, superintendent. Flannels, blankets, robes, cassimeres and tweeds; 6 sets; 24 looms. Sell direct (D & F) Machinery from Napa (Cal.) removed here..... ..

Portland. Portland Woolen Mills. Rebuilt plant. Make meltons, cassimeres and blankets. (Old mill destroyed by fire, Feb. '04.) ..... 6 42

**PENNSYLVANIA.**

Carlisle. Todd Carpet Manufacturing Co. R. R. Todd, manager and buyer; Wm. Humes, superintendent. Rag jute, domestic granite, cheap ingrains. Sell direct. ..... 20

Chester. Penn Woolen Co., Fourth & Penn Sts. Harvey F. Lamb, treasurer; Harry W. Myers, superintendent. Wool shoddies. Sell direct. (S) (11/04) ..... 4 ..

Glen Riddle. Binz Carpet Mill. $15,000. R. E. Ferd. Binz, president and treasurer. Carpets and art squares and stair carpets of granite ingrain. Sell direct and T. J. Keveney & Co., N. Y., s. agts. (D) (S & W) (6/04) ..... 17

Glen Riddle. Glen Riddle Mfg. Co. James H. Billington, president; Nicholas W. Steele, treasurer and general manager; Chas. J. Fox, secretary. Wadding, batting, woolens, cassimeres and cheviots; also spin woolen yarns. (D & Bl) 8 236

Philadelphia. Abbott Mfg. Co. Rented 20 looms of Clifton Mills Co. Geo. Sidebotham, manager. Sell through New York. (Will have equipment 40 looms) .. ..

Philadelphia. Bruch, William A. & Co., Kensington Ave. & Ontario St. Carpet and rug yarns. 1 picker. Sell direct. (E) ..... 3 ..

Philadelphia. Bush & Terry, 2766 Ruth St. Art squares. One winder, one spooler. Sell through agents. ..... 6

Philadelphia. Durham Carpet Co., William F. Hogg, 139 Oxford St. Wilton carpets. Sell direct. (S) ..... 59

Philadelphia. Ellison Manufacturing Co., Franklin and Church Sts., Frankford. Harry Lonsdale, manager. Plain and fancy dress goods. Oelbermann, Dommerich & Co., dept. G. Gross & Co., N. Y., s. agts. H. Lonsdale, buyer. (In Sidebotham Mills.) ..... 100

Philadelphia. S. Feather & Co., Franklin St. & Girard Ave. Fine worsted knitting yarns. Sell direct. ..... ..

Philadelphia. Gallashan, John., 25th & Callowhill Sts. Ladies' dress goods and wool and worsteds for men's wear. Also commission work. S. M. Scott & Co., N. Y., s. agts. ..... 60

Philadelphia. Gledhill & Keys, Alva Mills, Oxford St., east of Paul. Rugs and carpets. ..... ..

Philadelphia. Hall, Richard, Belmont Ave., West Manayunk. Carpet yarns and waste 12,000 lbs. per day). 416 mule spindles; 3 garnett machines. Sell direct. (S) ..... ..

Philadelphia. Hoffman, Geo. E. Mfg. Co., Leverington Ave. and High St. Mr. Tonson, superintendent and manager. Fine worsteds, men's wear. Sell direct and through agents. Mr. Tonson, buyer. (S) (9/04) ..... 36

Philadelphia. Kensington Spinning Company, Kensington Ave. & Huntington St. Samuel Taylor, superintendent. Woolen knitting and weaving yarns. ..... 2 ..

Philadelphia. Lion Yarn Co., 60th St. & Baltimore Ave. Yarn for weaving and knitting. (In plant formerly known as Angora Mills.) ..... ..

Philadelphia. Myer, H. H., Coral & Dauphin Sts. Rag and jute carpets. Sell direct. (Hand & E power.) ..... 23

Philadelphia. Orme, David Greer, Kensington Ave. & Ontario St. Cotton worsted and dress goods. Sell direct and through agents. ..... 30

Philadelphia. Philadelphia Art Square Mfg. Co., Wayne & Bristol Sts., Nicetown. H. S. Stansfield, superintendent. Extra super art squares. (S) ..... 3

Philadelphia. Sassman & Donahue, 1819 North 5th St. Ingrain carpets. Sell direct. ..... 12

Philadelphia. Sanitary Manufacturing Co., 145 Oxford St. $20,000. John Greer, president and superintendent; M. H. Greer, secretary and treasurer. Art squares and rugs. Sell direct.... 10

Philadelphia. Textile Manufacturing Company; Joseph McElroy, John McElroy, Chas. Lautemore and W. Rex Schultze; 2304 Waterloo St. Rugs and carpets. ..... 20

Trucksville. Goss Rug Carpet & Woolen Manufactory. H. C. Goss, superintendent and general manager. Rugs of all descriptions, rag carpets and woolen yarns. (D) (W & S) ..... 1 7

**RHODE ISLAND.**

Bristol. Namquit Mill. Purchased by C. B. Rockwell. Equipped for manufacturing men's and women's worsted cloth. (F) ..... ..

Woonsocket. Alsace Worsted Company. $120,000. Jacob H. Hary, president and agent; Aram J. Pothier, treasurer. Worsted yarn (French system), 7,000 spindles. Sell direct. (S) (11/04).. ..

**VIRGINIA.**

Winchester. Virginia Woolen Co. F. H. Hunt, superintendent and buyer. (S) (D) (Rebuilt plant destroyed by fire.) (9/04) ..... 4 24

**WISCONSIN.**

Appleton. McArthur, G. & Son. Rugs made from old carpets. G. McArthur (Baraboo, Wis.), buyer. (3/04) ..... 4

**CANADA.**

Sherbrooke. Moore Carpet Co., Ltd. $100,000. L. A. Bayley, president; Wm. Morris, treasurer; Henry W. Moore, managing director. Brussels and wilton rugs and carpets. 3 worsted cards; 2 combs; 600 worsted and 400 woolen spindles. Sell direct. (W) (D) (6/04) ..... 14

Toronto. Canada Wool Stock Co., Ltd. B. Osler, president; A. S. Parker, secretary and general manager. Wool stock and shoddies. ..... ..

**MANITOBA.**

Medicine Hat. Medicine Hat Woolen Mills Co., Ltd. $150,000. E. L. Gould, president; A. L. McPherson, treasurer; Philip Whelen, superintendent. Blankets, flannels, kerseys, tweeds, etc. Sell direct. (D) ..... 2 12

## NEW KNITTING MILLS

No. Ktg. Machines

**ALABAMA.**

Gadsden. Adams Knitting Mill. R. L. Adams. Ladies' undershirts. Bateson & Dowd, N. Y., s. agts. 7 sewing machines. (11/04) ..... 10

**CALIFORNIA.**

San Francisco. Saxony Knit Goods Co. Samuel Lewald, prop. Men's cardigan jackets. 5 sewing machines. Sell direct. ..... 7

**DELAWARE.**

Wilmington. Delaware Hosiery Mfg. Co. $15,000. Clarence Prettyman, president; Chas. B. Prettyman, treasurer; Wm. Moyer, superintendent. Misses' and children's seamless ribbed and flat hosiery. Clarence Prettyman, buyer. Berry & Smith, s. agts. (S) (10/04) .....100

**IDAHO.**

Boise City. Boise Knitting Mills. Union suits, shirts, drawers, sweaters, hosiery, etc., for men, women and children. Charles Pond and J. E. Merrill, owners. 4 sewing machines. Sell direct. (4/04) ..... 8

**ILLINOIS.**

Chicago. Perfect Knitting Mills, 254 E. Madison street. $25,000. Isador Natkin, president;; S. E. Newberger buyer. Sweaters for men, ladies, boys and children and cardigans. Sell direct. (Buy merino, wool and worsted yarns.) ..... 30

Menard. Southern Illinois Penitentiary Knitting Shop. R. L. Enscore, state superintendent. Hosiery for men, women and children to supply state. James. B. Smith, warden, buyer. (10/04)..... 40

## NEW KNITTING MILLS

No. Ktg. Machines

**MAINE.**

Brunswick. Cobb & Stetson. Hosiery. ..... 2

**MASSACHUSETTS.**

Boston. Boston Knitting Mills. S. Cohen, manager. 10 Bridge street, East Cambridge. Absorbed by the Union Overall Co., which will continue operating the plant. ..... ..

Cambridge. Oakes Knitting Mills. 686 Massachusetts avenue. Owen F. Oakes, superintendent and buyer. High grade ladies' men's and children's knit goods. 15 sewing machines. Sell direct..... 9

Canton. Meadows, James T. Men's cardigans and sweaters and ladies' sweaters and vests. Sell direct. (Hand power.) 3 sewing machines. (3/04) 8

Chelsea. Gordon Knitting Co., Harry; 67 Arlington street. Sweaters. ..... ..

Lowell. W. A. Eastman. Seamless half hose. ..... 9

New Bedford. Reliable Mfg. Co., 416 Kempton street. Hosiery and fancy knit goods. Sell direct. (D) (Gas) ..... 12

**MICHIGAN.**

Grand Rapids. Grand Rapids Underwear Co. $50,000. A. E. Remington, secretary; C. W. Hayes, treasurer and buyer; C. Burkee, superintendent. (Incorporation to operate plant started by Remington and Hayes.) ..... ..

Grand Rapids. Home Knitting Co. Men's hosiery. Sell direct. ..... 4

Grand Rapids. Imperial Knitting Co. $50,000. Samuel B. Jenks, president; Percival B. Garvey, treasurer; Geo. T. Fettig, superintendent. The Turnover Stockings, patented. Children's hosiery. Sell direct. (E) (7/04) ..... 24

Vassar. Vassar Knitting Works. Men's and boys' worsted sweaters, ladies' and misses' golf jackets, ladies' worsted skirts, men's cardigan coats. 3 sewing machines; gasolene. F. C. Hoyle, buyer. Buy worsted yarn. ..... 10

**MINNESOTA.**

Minneapolis. Schwartz Knitting Works. $75,000. Adolph Schwartz, president and buyer; Herman Schwartz, secretary, treasurer and superintendent. Ladies' men's and children's sweaters, cardigans and novelties; 4 sewing machines; finish. Sell direct. Buy yarn. (D) (E) (4/04)..... 25

**MISSISSIPPI.**

Columbus. Columbus Underwear Co. $100,000. F. W. Kavanaugh, president; E. E. Hopkins, treasurer; John McGinnis, agent and superintendent. Cotton and wool fleece lined underwear for men and children; 6 sets; 1,440 cotton spindles; 100 sewing machines. Sell direct. (D) (S) (12/04).. 45

**NEW JERSEY.**

Jersey City. Teitelbaum Bros., 2 Jordan avenue. Sweaters and blouses; 1 sewing machine. Sell direct. Buy woolen and worsted yarns. (F) ..... 3

Little Falls. Lotus Knitting Mills. 156 needle goods. ..... 30

Newark. D. E. Knit Goods Co., Max Guenther, manager. Sweaters for men, boys and infants; 6 sewing machines and loopers. Sell direct. (E).... 24

Rosenhayn. Empire Knitting Mills. A. Schwartz and D. L. Schiendelman. Wool and worsted golf vests, blouses and sweaters. Sell direct..... 28

**NEW YORK.**

Amsterdam. Chalmers Knitting Company. $25,000. David W. Chalmers, president; John R. Blood, treasurer. Men's, women's and children's balbriggan and ribbed underwear. (Use yarns, 7s to 22s cotton, and 36s to 40s worsted.) Sell direct. N. Y. office, 346 Broadway. (6/04)..... ..

Amsterdam. Edmunds, Henry. Successor to E. B. Wilson.) Fulled mitts. ..... ..

Amsterdam. Jordan, Cornelius. Ladies' Jersey ribbed underwear. (Use 9 and 10 combed Peeler yarn.) (S) (9/04) ..... 14

Brooklyn. Abramson, S., 1092 Bedford avenue. Knit goods. Sell direct; 2 sewing machines..... 4

Brooklyn. Brodovsky, Samuel, 46 Boerum street. Sweaters. Sells direct. Buys wool and worsted yarns. ..... 5

Brooklyn. Century Knitting Co., 280 Ainsley street. S. Broadwin, manager. Sweaters, golf vests; 2 sewing machines. Sell direct. (E)..... 6

Brooklyn. Drosin, Henry B., 36-40 S. First street. Cardigans, sweaters, blouses and tams in cotton, wool, worsted and mohair; 5 sewing machines. Sell direct. H. B. Drosin, buyer. (F) (S) ..... 9

Brooklyn. Hudson Knitting Mill. E. Heinecke, 936 DeKalb avenue. Infants' and fancy knit goods; 4 sewing machines; 2 winders. Sell direct. E. Heinecke, buyer. (F)..... 2

Brooklyn. Ingalls & Co., 412 Broadway. Sweaters. ..... ..

Brooklyn. Kahn, L. & Son, The Melrose Knitting Mills, 503 Bushwick avenue. Sweaters and ladies' waists; 3 sewing machines. Sell direct. Joseph Kahn, buyer. Buy wool, worsted and merino yarn. (F) ..... 10

Brooklyn. Ringheim-Schlichten Ramie Mfg. Co., Inc., office 473 Broome street, N. Y. $250,000. G. M. Schlichter, president and treasurer. Men's women's and children's knit underwear, hosiery, etc., of Ramie. Sell direct. About 50 knitting and 200 sewing machines. (Expect to start beginning of 1905.) ..... 50

Brooklyn. Royal Knitting Mill, 492 Bushwick avenue. Sweaters; 2 sewing machines. Sell direct. Buy wool and worsted yarns. (F) ..... 4

Brooklyn. Southern Knitting Works, F. Grossman, 97 Montrose avenue. Men's, women's, boys' and infants' sweaters; 2 sewing machines. M. I. Grossman, buyer. Buys 2/20 wool yarn. (F) (E).. 11

Castleton. Ganson, Charles F. Gloves, mittens, wristlets, etc.; 1 sewing machine..... 3

Cohoes. Electric Knitting Co., O'Lena & Moore, proprietors, 30 Remsen street. All kinds of knit novelties, etc. (W) (8/04.....

Kinderhook. Elk Manufacturing Co. Gloves, mittens and knitted novelties. (Partnership W. A. Ferguson and W. P. Johnson.) (10/04)..... 6

New York. Ardsley Knitting Mills Co. $100,000. (Operating plant formerly known as the Riverside Knitting Mill Co.,) 407 E. 91st street. Edgar L. Auer, superintendent. Manufacture ladies' Swiss ribbed vests, lisle and mercerized cotton; 25 sewing machines. ..... 18

New York. Finlay, P. M., 852 Eighth avenue. Sweaters, cardigan jackets, bicycle and golf hose; 1 sewing machine. Sell direct. (F)..... 8

New York. Manhattan Knitting Mills. J. J. Lippmann and A. Silverberg, 18 Lispenard street. Sweaters, blouses, German hose, socks and stockings, athletic goods, foot and baseball hose. Sell direct; 3 sewing machines. ..... 16

New York. Schiffer, Louis. Infants' knit goods, leggings, drawers and sweaters; 4 sewing machines. (S) (Contract work.) ..... 7

New York. Shapiro, S. & Balacaier Bros, 201 Grand street. High grade ladies' knit blouses; 6 sewing machines. I. Balacaier, buyer. Sell direct. (Buys 20s wool and 2/14 worsted yarns.)..... 10

New York. Vienna Knitting Mills, Bassechès & Tepper, proprietors, 167 Chrystie street. All kinds of fancy knit goods, ladies' golf blouses a specialty. Sell direct. M. Bassechès, buyer. Hand power. 5 sewing machines. ..... 11

New York. Zacks, L., 529 1/2 Bushwick avenue. Sweaters. Sells direct. ..... 2

New York. Zoll, Jacob, 196 Ellery street. Wool sweaters and all kinds of knit goods. Sell direct. (Hand.) ..... 5

New York. Yale Knitting Mills, 96 Throop avenue. E. Ruggreio, superintendent. All kinds knit goods; 8 sewing machines. Sell direct. M. H. Horn, buyer. (S) (F)..... 42

St. Johnsville. St. Johnsville Knitting Company. $25,000. Incorporated. (Operate plant formerly run by H. K. Salisbury.) Ladies' and children's cotton ribbed underwear; 10 knitting machines. Building an addition, 40 by 40 feet, 2 stories. ..... ..

**NORTH CAROLINA.**

High Point. High Point Hosiery Mills. $25,000. J. H. Millis, president; J. H. Adams, treasurer and buyer. Misses' ribbed hosiery. (Under construction Oct., 1904.) (D) (S) .....100

Hillsboro. Belle-Vue Mfg. Co. S. Stendwitch, president; T. N. Webb, treasurer. Children's and misses' hosiery. (D) (S) (1/05)..... ..

Kernersville. American Hosiery Mills. Half hose and hose; 4 sewing machines. Buy yarn, 5s to 20s. ..... 18

Monroe. Crowe Hosiery Mill Co. $25,000. R. A. Morrow, president; J. J. Crow, treasurer; H. E. Wilson, general manager. Boys' and misses' ribbed hose. (D) (S) (8/04) ..... 42

Rocky Mount. Rocky Mount Hosiery Co. $100,000. J. C. Braswell, president and treasurer; Geo. T. Andrews, superintendent. Misses' hose. (Expect to start about Feb., 1905) (S) (D)..... ..

Tryon. Tryon Underwear Company, Thomas De Hart, superintendent. Ladies' light underwear. (Use 22 single yarn.) 4 sewing machines. Sell direct. (S) (4/04) ..... 5

Valdese. Waldensian Hosiery Co. Added 10 Mayo machines for half hose. ..... ..

Washington. Queen Hosiery Mills, D. W. Bell, secretary and treasurer; M. A. Smith, general manager. Ladies' fine hosiery. ..... ..

**OHIO.**

Newark. Heisler, Wm., 76 Riley street. Knitting Mill. ..... ..

**PENNSYLVANIA.**

Bath. Odenwelder, D. J. Men's and children's hosiery. Sells direct. (Buys yarns.) (D & F) (1/05) 25

Bethlehem. Philadelphia Hosiery Co., Inc. $10,000. Chas. F. Hendricks, president; Samuel Graham, treasurer; Geo. D. Dobbins, buyer. Misses' cotton ribbed hose. 15 loopers. ..... 65

Carlisle. Maisch Incandescent Light Co. $100,000. J. W. Wetzel, president; Wm. H. Woodward, treasurer; Geo. H. Maisch, superintendent. Webbings for gas mantles. C. L. Jackson & Co., Philadelphia, s. agts. (S) ..... 3

Duncannon. Duncannon Knitting Mill. New building erected, replacing plant destroyed by fire Jan., 1904. Half hose and children's hosiery. (6/04) ..... ..

East Berlin. East Berlin Knitting Mills, B. A. Jacobs, proprietor. Half hose, 84 needle. (S)..... 3

Lebanon. Hawk Knitting Company. Reading, Pa. Established branch plant. Men's half hose. (Finishing done at Reading mill.) 5 ribbers, 4 loopers. (11/04) ..... 40

Lock Haven. Lock Haven Knitting Co. W. S. Stevenson, president; Earl Hagadone, vice- president; John R. Stevenson, secretary and treasurer; R. O. Hagadone, superintendent and general manager. Cotton, wool, worsted, silk and ribbed underwear. ..... ..

Lyons. American Knitting Mills. (Paul Dreisel and Henry Polenz.) Men's fancy seamless half hose,

160 needle goods. Paul Dreisel, buyer. Sell direct. (S) ..... 32

Millheim. Romberger, H. A. A. D. Hoke, superintendent. Men's, women's and infants' seamless cotton hosiery; 14 sewing machines. (Branch of Middletown and Newport.) ..... 38

Nazareth. Wunderly, Fred. Children's cotton seamless hosiery; 16 ribbers. Geo. M. Lillie & Co., N. Y., s. agts. (S) (F) ..... 15

Norristown. Ballard Knitting Mills. Men's underwear in cotton, Egyptian and mercerized; 8 sewing machines. H. T. Ballard, buyer.; (E)..... 15

Philadelphia. American Knitting Machine Co., 167 Oxford street. Wm. Schall, Jr. (New York), president; E. Pavenstedt, treasurer; H. E. Ashmore, general manager; W. P. Young, superintendent. Cotton hosiery. (S) (10/04).....125

Philadelphia. American Knitting Mills. David Block & Co., 121 North Fourth street. Sweaters, bathing suits, blouses and Norfolks; 28 sewing machines; 1 winder. Sell direct. (S) (Buy 2/20 wool, 3/20, 4/19 worsted yarns.) ..... 45

Philadelphia. Barger & Bains. (Formerly C. C. Barger.) Removed plant to S. E. corner Mascher and Turner streets. Seamless hosiery for infants; 3 sewing machines. (S) ..... 34

Philadelphia. Beattie Hosiery Company, 2420 Waterloo street. Alexander Beattie, superintendent. Flat, ribbed and all kinds ladies' hosiery. Sell direct. ..... 9

Philadelphia. Burghausen, Frederic, 421 Fairmount avenue. Sweaters, etc. (Grosser machines.)..... 2

Philadelphia. Carlton Knitting Co., E. S. Rogers, proprietor. A. W. Hess, superintendent. Tam O'Shanters, toques, etc. (Use worsted yarns, 9s to 2/17. Sell direct. (In Godshalk Mills, 24th and Hamilton streets.) ..... 7

Philadelphia. Gee Bros. & Co., Mascher and Master streets. Albert Gee, superintendent and buyer. Fine hosiery, for men and women. Sell direct. (12/04) .....

Philadelphia. Girard Hosiery Co., 2420 Waterloo street. Hoffman Bros. and L. Effenberg. Harry Hoffman, superintendent. Ladies' fine hosiery. (Use 18 and 60 cotton yarn.) 1 sewing machine. Sell direct. ..... 54

Philadelphia. Girard Knitting Mills, 10th and Susquehanna avenue. R. M. Yost, proprietor. Woolen Tam O'Shanters; 5 sewing machines. S. Cohen & Co., N. Y., s. agts. (E) ..... 15

Philadelphia. Haman, F. D., 2304 Waterloo street. Athletic knit goods of all kinds. Sell direct..... 4

Philadelphia. Keystone Knitting Mills. S. E. Nathanson, 218 Arch street. High grade sweaters and ladies blouses; 1 sewing machine; 1 winder. Sell direct. ..... 6

Philadelphia. Liveright & Davidson, Indiana avenue and A street. Ladies' and misses' fine hose; 1 sewing machine. Sell direct. (Use Egyptian 28/2 to 60/2.) ..... 50

Philadelphia. Locke & Aucott, 4318 Frankford avenue. Ladies' hose, infants' cotton merinos and wool hose, also lace lisle hosiery. (After Jan. 1st will have 125 machines.) 10 sewing machines; 6 loopers. Hecht & Campe, New York, s, agts. (7/04) ..... 45

Philadelphia. Mascot Hosiery Co. Mascher and Turner streets, 19 Strawberry street. Hand knitted goods and buying and selling hosiery and half hose in the grey. .....

Philadelphia. Pike, John E., S. E. corner Mascher and Oxford streets. Athletic knit goods, sweaters, cardigan jackets, base ball hose, etc. Sell through agents. (Hand and steam.) ..... 6

Philadelphia. Royal Knitting Mills Co., 1427-1433 Catherine street. $10,000. B. Robbins, president and treasurer; M. Levin, superintendent. Infants' and boys' sweaters; 10 sewing machines. Sell direct and Bruhn, Webb & Alfred, 114 Franklin street, New York, s. agts. (S) (Buy wool and worsted yarn.) ..... 15

Philadelphia. United States Knitting Company. Goldblatt & Busch, 426-428 Market street. High grade sweaters, golf vests, blouses and bathing suits; 28 sewing machines. Sell direct. (S)..... 40

Pottsville. Auto Knitting Mills. $10,000. John H. Kaiser, president; J. I. Saul, treasurer and superintendent. Hosiery and underwear. Sell direct; 3 ribbers; 4 loopers. (S)..... 20

Reading. Hawk, Geo. W. Half hose; 12 sewing machines. Sell direct. (S)..... 32

Reading. Kutz Knitting Mill. C. J. & B. L., 111 Lemon street. Calvin J. Kutz, superintendent. All kinds of ladies' hose, cotton Maco foot a specialty; 1 sewing machine. (F) (S)..... 40

Schuylkill Haven. Lautenbacher Enterprise Knitting Mills. Children's and misses' union suits. (Use yarns, 11 to 14.) J. C. Lautenbacher, buyer. Critten, Clift & Co., N. Y., s. agts.; 55 sewing machines. ..... 35

Scranton. Perfection Knitting Mills, 513 Lackawanna avenue. John A. Mears, president; C. S. Chittenden, treasurer; W. P. Boland, secretary; Clemens Lenke, manager and superintendent. Sweaters, cardigan jackets and fancy knit goods; 3 sewing machines. Sell direct. (D & F) (S)..... 10

Scranton. Groat Knitting Co. $200,000. Edw. Groat, president; C. S. Johnson, vice-president; C. C. Groat; treasurer, superintendent and manager. Fleece lined underwear, medium grade. Sell through agents. (D & F) (S) 19 sets of machinery. (New mill erected.) ..... 100

Scranton. Scranton Knitting Mills. D. Harris & Co., 502 Lackawanna avenue, proprietors. David Knopfel, superintendent; Chas. Riceman, buyer. Blouses, cardigan jackets, boys' and juvenile and men's high grade sweaters; 3 sewing machines. Sell direct. (S) (5/04) ..... 12

Shamokin. Diamond Knitting Mills, J. H. Hoffman, proprietor. W. S. Shelton, superintendent. Men's, ladies', children's and infants' hosiery; 30 rib frames; 8 loopers. Wm. Iselin & Co. and Parks & Muckle, s. agts. (S) (5/04) .....100

Sinking Spring. Gring, Lewis. Cotton half hose; 2 ribbers; 1 looper. ..... 10

South Bethlehem. Austin Knitting Co. Frank Groman, president; C. Chas. Groman, secretary and treasurer; Wm. H. Jacobs, superintendent and manager. Fine hosiery. Sell through agents. (To increase to 80 machines.) (10/04) ..... 20

Wyomissing. Leinbach, H. D. Hosiery, rib goods. (Use nos. 18s, 20s and 40s yarns.) F. B. Berlin, N. Y., s. agt. (S) (New building erected, 3 stories and basement.) ..... 16

**SOUTH CAROLINA.**

Blackville. Alling, W. M. Ladies' and men's cotton and worsted seamless hosiery. (Use 10s to 40s cotton, also worsted.) Sell direct, 256 Church street, N. Y. (S) (D)..... 75

McColl. Marlboro Cotton Mills. New building erected, 272 by 75 feet, one story, for knitting mill. Men's fleeced lined underwear; 70 sewing machines. (D) (S) (8/04) ..... 25

Spartanburg. Crescent Manufacturing Co. $50,000. D. D. Little, president; J. J. Littlejohn, vice-president; Hugh Little, secretary and manager; C. P. Rogers, superintendent. Men's and boys' ribbed hosiery; 50 ribbers; 16 loopers. Sell direct. (D) (S) (New building 132 by 62 feet, brick, and dye house 40 by 60, one story, erected.) (7/04) ..... 50

Walhalla. Oconee Knitting Mill. $15,000. R. T. Jaynes, president; W. John Schroder, superintendent. Misses' and children's hosiery. Buy yarn. (S) (D) (9/04) ..... 25

Westminster. Westminster Knitting Mills. $20,000. W. P. Anderson, president and treasurer. (Hosiery or underwear.) (S) (D) (Under construction.) Expect to start up March 1st, 1905. (3/05)..... 50

**TENNESSEE.**

Chattanooga. Davis Hosiery Mills. $100,000. G. H. Miller, president; W. B. Davis, treasurer. Men's, women's and children's hosiery. John M. Given, s. agt. (D) (S) 5 sewing machines. (12/04).....100

**TEXAS.**

Navasota. Schumacher Knitting Mills, H., The. All kinds of hosiery. (Contemplate adding machinery for underwear.)..... ..

**UTAH.**

Lehi City. Standard Knitting Co. $25,000. D. L. Van Wangnen, president; C. C. Friel, treasurer; Jas. M. Kirkham, agent and superintendent. Men's, women's and children's knit goods; 9 sewing machines. Sell direct. (E) (6/04)..... 13

Provo. Utah Knitting & Mfg. Co. Joseph Broadbent, superintendent and buyer. General line knit underwear. Sell direct. (E) (5/04)..... ..

**VIRGINIA.**

Portsmouth. Lewis Jones Knitting Co. Established branch mill in Piedmont Mfg. Co.'s plant. Jos. W. Leafe, in charge. 20 sewing machines. (Main mill at Winchester.)..... 20

**WISCONSIN.**

Beloit. Racine Feet Knitting Co. John W. Amend, manager and buyer. Cotton, woolen, cashmere, worsted and merino men's, women's and children's seamless hosiery. 125 knitting machines; 4 sewing machines. Sell direct. (F) (S) (Formerly Racine Knitting Co.'s mill.)..... ..

Manitowoc. Wisconsin Knitting Mills Co. $100,000. E. C. Sixta, president and treasurer; E. H. Lud-

wig, superintendent. Sweaters, cardigan jackets, golf blouses and other knit novelties. 10 sewing machines. Sell direct. (S & E) (To increase to 60 machines and 20 sewing machines.) (7/04)..... 24

Plymouth. Bonsa, C. H. Misses', ladies' and men's hosiery. (Buys worsted and woolen yarns.)..... 3

Neenah. Neenah Knitting Co. $25,000. H. K. Babcock, president; C. H. Kramer, vice-president; Wm. C. King, secretary and treasurer; J. F. Cahill, superintendent. Principally men's, boys' and ladies' sweaters. 5 sewing machines. Buy yarns. (Gasolene.) (12/04)..... 25

**ONTARIO.**

Brantford. Brantford Hosiery Co., Ltd. $75,000. John H. Hines, treasurer; R. J. Strauss, superintendent. Hosiery. (S) (D)..... ..

Dunnville. Coupe Manufacturing Co. $20,000. H. A. Coupe, president; W. A. Davis, agent; W. J. Brennan, superintent. Sweaters, lumberemen's socks, toques, golf and ladies' vests. 8 sewing machines. (S) (D) (Buy woolen and worsted yarns.) ..... 33

Stratford. Avon Hosiery Co., Ltd. $40,000. D. M. Ferguson, president and treasurer; R. L. Baker, agent; B. M. Williams, superintendent. Ladies' hose, men's socks, toques and children's hose. Sell direct. (New building erected.) (E) (D) (8/04) ..

Toronto Junction. Crown Knitting Mill Co. Peter Ryan interested. New building 250x50 feet, one story, built. F. W. Herington, manager. (Capacity 150 to 200 doz. per day, men's underwear.).. ..

## NEW SILK MILLS

**CONNECTICUT.**

Putnam. Hampton Silk Co. Hammond & Rich, proprietors. Silk throwing.

South Manchester. Matchett Bros. Broad silks. Sell direct. 21 looms.

**MARYLAND.**

Hagerstown. Snyder Ribbon Mills. D. Frank Snyder. Silk ribbons; plain and fancy. D. Frank Snyder, buyer. 5 looms; 120 spindles. Sell direct. (E) (8/04)

**MASSACHUSETTS.**

Farnumsville. Dexter, Lambert & Co. Remodelled Farnumsville mill for manufacturing silks. A. G. Kempton, manager.

Holyoke. William Skinner Mfg. Co. New mill 200x60 feet, four stories. To be equipped with 1604 looms. (Under construction.)

New Bedford. Meadville Silk Mfg. Co., Meadville, Pa. Branch plant started here. 25 looms. To increase if successful.

**NEW JERSEY.**

Midland Park. Midland Park Silk Co. $25,000. Nicholas Murray, president; Wm. C. Lucas, treasurer; William Yates, secretary. Broad and tie silks. 44 looms. (S)

Paterson. Aetna Silk Co. 38 Lakeview Ave. Charles Fischer, secretary and treasurer. Broad silks and veilings. 38 looms. Sell direct.

Paterson. Blondill & Brabant. Gordon Mill. Broad silks. 16 looms. Sell direct.

Paterson. Cohen, Abraham D. North Second St. Dress silks; 24 broad looms.

Paterson. Crescent Silk Co. Harmony Mill. Broad silks. 22 looms. Sell direct.

Paterson. Mains, Geo. A. & Co., 135 Sherman avenue. Broad silks. 19 looms. (Successors to Majestic Silk Co.)

Paterson. McCullough Bros. Commission warpers and winders.

Paterson. Miedendorp, Harry. Piaget Mill. Dress silks. 24 looms.

Paterson. Migel & Blum. Todd Mill. Ribbons. S. Peieris & Co., N. Y., s. agts.

Paterson. Passaic Silk Co., 58 Railroad avenue. (B. Bornstein and E. Trachsler, partners.) Broad silks. 22 looms. B. Bornstein, buyer. Sell direct. (S)

Paterson. Progressive Silk Co., 49 Goodwin street. Broad and tie silks. 10 looms. Sell direct and agents.

Paterson. Queen Silk Co. Barnet Mill. Broad silks. 14 looms. Sell direct.

Paterson. Rosenthal & Weberman. Hamilton Mill. Broad silks. 6 looms. Sell direct.

Paterson. Seiffer, Leo B., 93 River street. Broad silks. 10 looms. Sell direct.

Paterson. Smith, Thos., 144 Oak street. Narrow Ribbons. 4 looms. Sell direct.

Paterson. Sutton & Potts, 57 Albion street. Broad dress and lining silks. 24 looms. Sell direct.

Paterson. Upland Silk Co. $100,000. Hamil Mill. O. De Forest, president; W. H. De Forest (482 Broome street), treasurer. Ribbons. 65 looms. Finish.

Paterson. Van Riper, A. J. Dress and tie silks and mufflers. 50 looms. (S & W) Sell direct. A. J. Van Riper, buyer. (4/04)

Paterson. Walton M. & Son, Railroad Avenue and Thomas street. Broad silks. 12 looms.

Paterson. Warner Mfg. Co. Broomhead Mill. Fancy ribbons. Sell direct.

Paterson. Wolf Silk Co. Essex Mill. Broad silks. 6 looms. Sell direct.

Paterson. Wolf & Rosenstein, 93 River street. Broad silks. 6 looms. Sell direct.

**NEW YORK.**

Cortland. Cortland Silk Mfg. Co. $50,000. Broad silks. 50 looms. Wilmer & Wolff, N. Y., s. agts.

Hornellsville. Huguet-Merrill Company. Gauze Chiffons. Sell direct. (10/04)

New York. Wells Bros. & Strauss, 403-405 E. 91st street. (Office 476 Broome street.) Silk ribbons. 30 looms. Schaeffer, Schramm & Vogel, s. agts. F. A. Wells and E. Strauss, buyers. (S)

Watertown. Watertown Silk Manufacturing Company. $10,000. Ralph Whitley, president, agent and superintendent; C. E. Brockway, treasurer. Broad silks. 43 looms. (W) (7/04)

**PENNSYLVANIA.**

Chambersburg. Chambersburg Silk Mfg. Co. $50,000. W. Richards Thomas, Jr., president;; Van T. Haulman, treasurer; F. W. Thomas, superintendent. Broad silks. 50 looms. Sell direct. (S) (New building erected, 120 by 40 feet, two stories.) (9/04)

Duryea. Dutton Silk Co. $30,000. William Dutton, president and superintendent; James Dutton, treasurer. Silk throwing. 5,000 spindles. (S) (8/04)

Erie. Erie Silk Mills. M. C. Migel, president; I. E. Tallman, treasurer. Dress silks. N. Y. office, 41 Greene street.

Grove City. Grove City Silk Mfg. Co. $50,000. E. T. Firth, president; E. B. Harshaw, treasurer; J. P. Shorrock, vice-president and superintendent. Yarn and piece dyed goods, silk and mixed. 1250 spindles; 140 looms. Trumpette & Co., N. Y., s. agts. J. P. Shorrock, buyer. (5/04)

Jersey Shore. Bloomsburg Silk Mill. (Bloomsburg, Pa.,) Branch mill. Silk dress goods. (S)

Lansford. Century Throwing Company. $100,000. P. T. Rowson, president; Alex. McLane, superintendent. Silk throwing on commission. Built new mill here of 13,500 spindles. (Removed from Paterson, N. J.)

Mercer. Mercer Silk Mills Co. $25,000. R. R. Wright, president; Herman Frankel, treasurer. Silks. 50 looms.

Nanticoke. Nanticoke Silk Throwing Co. $50,000. James Govean, president and manager; Frank Frigerio, vice-president; Peter Magagna, secretary and treasurer. 6,000 spindles. (S) (1/05)

Nanticoke. Storms, A. L. & Co. W. J. Morgan, superintendent. Throwing silk. 8,000 spindles. (12/04)

Peckville. Bliss, Valentine. New throwing plant started here. 5,000 spindles.

Philadelphia. Art Fibre Company, Inc., Mill S. W. corner 5th street and Columbia avenue. Office, 1017 Race street. H. Bernstein, president; Russell Murray (N. Y.), treasurer;; Clement H. Scheibner, superintendent. Artificial silk. 10 frames. Sell direct. (D & F) (S)

Philadelphia. North American Velvet Co. Manayunk. Office, 615 Walnut street. Velvets. 6 looms. Sell direct.

Philadelphia. Stivers, G. J. & Co., 4434 Penn street. Frankford. Woolen worsted and silk dress goods. 12 looms. Sells direct. (Gas.) (3/04)

South Bethlehem. Lloyd Mill. (Branch plant of Lehigh Valley Silk Mill.) J. Cardiff, superintendent. Throwing.

West Pittsburg. Woodhouse, Bopp & Co. G. H. Uhlig, Jr., in charge. Broad silks of all kinds. 200 looms. (Branch of main mill at New York.)

Wilkesbarre. Empire Silk Mills. Bamford Bros. Robert Speirs, superintendent. Silk ribbons. (S) (Branch of Paterson, N. J.)

Wind Gap. Crown Silk Co. C. W. Weiss, superintendent. 25 looms. (7/04)

**CANADA.**

Ontario, Toronto. Canadian Silk Co., Ltd. $40,000. W. R. Walton, president; D. L. Smith, secretary; James C. Gaynor, superintendent. Woven labels. 8 looms. Sell direct. (E) (1/04)

## MISCELLANEOUS NEW MILLS

### CALIFORNIA.

Californian Cordage Co. $213,000. J. F. Burns, president; W. F. Parker, secretary; W. H. Alexander, treasurer; B. F. Scott, superintendent. Jute and paper twines; electricity. J. W. Ellsworth Co., San Francisco, s. agts. (Buy yarns.)

### COLORADO.

Denver. Denver Wool Co., The. $100,000. Robert Miller (Tiffin, O.,) president; Dallas J. Osborne, treasurer; Rudy Studybaker, superintendent. Scouring wool. (S)

### ILLINOIS.

West Pullman. Page Shade Cloth Co. Installed plant for dyeing, bleaching and finishing curtain cloths.

### KENTUCKY.

Paris. Spears, E. F. & Son. Rough and dressed hemp and tow. Sell direct.

### MASSACHUSETTS.

Braintree. Norfolk Linen Co.

Holliston. Holliston Braiding Co. $100,000. Aloise Maeder, president; L. A. Gardner, treasurer. All kinds plain and fancy braids. 25 braiders. Sell direct. (S)

Methuen. Tekcips Dyeing, Weaving & Finishing Co. $60,000. Joseph D. Price, president and superintendent. (D) (S)

Worcester. Lancaster Lace Works. $$100,000. John E. Lancaster, president and general manager; Joseph F. Lancaster, treasurer; Fred S. Shelton, superintendent. Shoe and corset laces. 500 braiders. Sell direct. (S)

### NEW JERSEY.

North Paterson. Scola's Piece Dyeing & Finishing Works. T. Scola, proprietor. Dyer piece goods and finisher piece goods (silk). (S)

### NEW YORK.

Binghamton. Binghamton Linen Mill. Frank S. Upton, Leon W. Johnson and W. H. Gaylord interested. Linen toweling and fine linen goods.

Waterford. De Forest & Stover. Trimmings for underwear.

### OREGON.

Salem. Pacific Coast Flax Fibre Co. $20,000. Eugene Boss, manager. Flax fibre, straight and tangled; electricity. Sell direct.

### PENNSYLVANIA.

Allentown. Pozzi, Joseph. Building dye house.

Philadelphia. Diamond Bleaching Co. (Formerly the Dewey-White Bleachery Co.,) 2539 Potter street. Bleaching and finishing cotton goods, plushes, tapes, etc.

Philadelphia. Drexler, William & Co., Worth and Granite streets, Frankford. Wm. H. Drexler, superintendent. Dyers of cotton yarns. (Capacity 1,000 pounds per day.)

Philadelphia. Duerre, Ernst F. Front and Clearfield streets. Dyeing fine woolen and worsted yarns, slubbing, tops and cotton worsted yarns. 5 machines.

Philadelphia. Forrest Bros., Cottman street and State road, Tacony. Mercerizing and dyeing cotton warps.

Philadelphia. Godshalk, E. H., Dyeing & Finishing Co., 23rd and Hamilton streets. Frank A. Bell, superintendent. Dyeing, finishing and bleaching yarn, cloth and underwear. Frank Bell, buyer.

Philadelphia. Gold Medal Hammock Co., N. E. corner 9th and Dauphin streets. J. B. Patterson interested.

Philadelphia. Integrity Dyeing Company. 408-418 Memphis street. Frank Fisher, superintendent. Fast black and colors on hosiery. (Capacity 4,000 pounds a day.)

Philadelphia. Kennedy, John M. Jr., C street south of Ontario. New dye house, 64 by 64 feet, 2 stories.

Philadelphia. King, Arthur, 1729 Gillingham street. Glazing and balling of cords, twines, spindle banding, etc.

Philadelphia. Lenox & Masland, 2076 Margaretta street, Frankford. Joseph Masland, superintendent. Dyeing in colors on cotton yarns.

Philadelphia. Pairuba Manufacturing Co. $100,000. F. A. Sheck, Eugene Goodman. Printed burlap and dyed burlap carpets and rugs.

Philadelphia. Thomas Spence, 4434 Penn street. Beamer of cotton and woolen warps; 2 frames.

Philadelphia. Verbeken & O'Connor. Josephine and Oxford streets, Frankford. Felix Verbeken, superintendent. Finishing upholstery goods and moire work. (3/04)

Pottstown. Kennedy, J. A. Dyeing Company. Fast black and colors on cotton hosiery and yarns. Fast black a specialty.

Pottstown. Pottstown Hosiery Print Works. Dye, print and extract hosiery.

South Bethlehem. Graf, J. F. South Bethlehem Fast Black Dye Works, 219 Broadway.

South Bethlehem. Loesher & Fickert. Dyeing fast black on hosiery.

### RHODE ISLAND.

Hopkinton. New England Linen Co., The. $150,000 Charles W. Bowen, president; J. Irving Davis, treasurer; Richard J. Reeves, vice-president and general manager; J. M. Hathaway, superintendent. Flax yarns, 6 to 8 lea. Sell direct. Office Providence. (Purchased old Hopkinton Mill.)

Knightsville. Caldwell Mfg. Co. $20,000. Horace Thurston, president; Alfred Caldwell, treasurer and agent; James Nelson, superintendent. Flexible Tubing for gas stoves and portable lamps. 150 braiding machines; 36 spindles. Sell direct.

Riverpoint. Continental Finishing Co. $100,000. L. D. Pierce, president and treasurer; E. L. Stewart, superintendent. Finishing cotton goods. (10/04)

Woonsocket. Friedrichs Dyeing Co., The. Dyers of worsted tops.

### VIRGINIA.

Lynchburg. Hosiery Finishing Co. Dyeing, finishing, printing and embroidering.

### WASHINGTON.

Seattle. Portland Cordage Co. (Portland, Ore.) Branch mill established here. 76 spindles. Manila and sisal cordage.

### WISCONSIN.

Albany. Blackhawk Mills. $25,000. Francis Hickman, president; Wm. C. Van Ness, treasurer. Linen crash. 650 flax spindles; 75 looms. Water.

### CANADA.

Quebec. Drummondville, Drummondville Cotton & Bleaching Co. $150,000. Bleach and finishing cottons. Messrs. Geo. A. Gatehouse and Geo. Bothamley (Montreal), interested. Expect to have same running in Jan., 1905.

# Projected Industries.

Under this head are enumerated such projects as are now in course of construction, or which in all probability soon will be, but which are not sufficiently far advanced to be properly identified in the list of new mills.

## COTTON

### MISSOURI.

Carthage. Carthage Cotton Mill Company. $600,000. (authorized) $212,500 (paid in.) Witten McDonald, president; J. L. Moore, treasurer. 10,000 ring spindles and 300 looms. Steam.

### NORTH CAROLINA.

Gastonia. Gray Mfg. Co. $150,000 Geo. A. Gray, president and treasurer. Print cloths. 10,000 spindles; 350 looms. Steam. (Will start construction April, 1905; operations about September, 1905.)

Lincoln. Lincoln Cotton Mills. $125,000. John L. White, (Jersey City, N. J.,) and Edward A. Johnson (Raleigh,) interested.

### SOUTH CAROLINA.

Gaffney. Gaffney Carpet Co.'s property. It is reported may be utilized for a cotton mill.

### TEXAS.

Chico. Farmers Co-operative Union Cotton Mills. E. C. Stockton, president; Ed. O. Dickinson, secretary. $200,000 mill proposed.

Mabank. Electric Cotton Mills. W. I. Young, president and treasurer. Novelty goods. 10,000 spindles. (Expect to be running in spring.)

Paris. Electric Cotton Mills. W. I. Young, president and treasurer. Duck. 20,000 spindles. (Expect to be running in spring.)

## WOOLEN

**KENTUCKY.**

Salt Lick. Salt Lick Woolen Mill. $40,000. C. C. Johnson, president; M. F. Christian, treasurer. Woolen goods. (S) (To start construction work about first of year.)

**MASSACHUSETTS.**

Concord Junction. Chapin, Edwin P., (formerly of American Woolen Co.,) reported to equip rubber mill with 60 to 100 looms for manufacturing worsteds.
Methuen. Jersey Cloth Co. $40,000. Frank Remick, president; Perley D. Smith, secretary and treasurer.

**NEW JERSEY.**

Haddonfield. Clifton Mills Co. $100,000. Woolen goods.

**NEW YORK.**

Schenectady. Charles Mahoney & Co., Inc., $25,000. Wm. L. Foley, president; Charles Mahoney, treasurer. Shoddy and wastes. (To build a new mill and manufacture yarns.)

**OREGON.**

Astoria. Wilbur, John P., Union, Ore. Proposes starting branch mill.

**PENNSYLVANIA.**

Chester. Marion Mills Co. Organized to operate Mill No. 3 of old Shaw, Esrey & Co.'s plant. Murphy Bros. interested.

**RHODE ISLAND.**

Pascoag. Clear River Mills. New company reported organized to build on site of plant destroyed by fire.

## KNIT

**MASSACHUSETTS.**

Pittsfield. Purnell, James O. To start plant for manufacturing mittens, tam o'shanters.

**MICHIGAN.**

Saginaw. Saginaw Sewing Machine Co. Propose organizing company with capital $20,000 for knit goods.

**NORTH CAROLINA.**

Elkins. E. F. McNeer, W. C. and B. E. Fields interested in mill for cheap hosiery, proposed.
Winston-Salem. Wachovia Knitting Mills Co. $50,000. W. S. Seiwers and Salem Iron Works, interested.

**SOUTH CAROLINA.**

Williston. Smith, E. C. Hosiery mill, proposed.

**TENNESSEE.**

Brownsville. Commercial Club. Interested in offering inducements to parties to establish electric cotton or knitting mill here.
Gallatin. J. T. Durham. Interested in establishing knitting mill here.

**TEXAS.**

El Paso. V. E. Luhorne. Hosiery mill, contemplated.

## SILK

**NEW JERSEY.**

Paterson. Greer & Hutton Co. $150,000. William A. Greer and David T. McClellan.

**NEW YORK.**

Canisteo. Silk mill proposed.

**PENNSYLVANIA.**

York. Merchants' Silk Co. $5,000. John D. Arnold, Charles A. Hawkins, Walter D. Sudick, interested.

## MISCELLANEOUS

**ONTARIO.**

Orillia. Canada Linen Works, Ltd. $500,000. Edwin J. H. Pauley, president and buyer. Twines, yarns, 8s to 20s, thread from hemp, flax and jute, crashes, towelling, jute bagging, etc. (D) (E) Expect to start building at an early date.

# Important Changes.

## COTTON

**GEORGIA.**

Athens. R. L. Moss & Co. Purchased the Athens Cotton Mill at sale.
Barnesville. Aldora Mills. $125,000. J. W. Hanson, superintendent. Mule spun cotton yarns, 8s to 24s. 9797 mule spindles. (S) (Purchased plant formerly operated by the Barnesville Mfg. Co.)
Tennille. Tennille Yarn Mills. J. W. Smith, president; T. N. Smith, vice-president; J. H. Arnall, treasurer; C. Enos Bean, secretary and manager. Fine quality mule spun cotton hosiery yarns on cones. Sell direct, and Schell, Taylor & Longstreth, s. agts. 4,000 mule spindles. (Formerly the Tennille Cotton Mill property.) (10/04)

**MARYLAND.**

Millington. Queen Anne Cotton Co. Howard D. Ross, president; Thomas W. Johnson, Jr., secretary and treasurer; Wm. B. Fitty, superintendent and buyer. (New company operating Unicorn Mills.)

**MASSACHUSETTS.**

Westfield. Planet Manufacturing Co. $50,000. R. H. Kneil, president; Robert Gowdy, treasurer; A. M. Schappa, general manager. Absorbed plant of Columbia Thread Co.

**PENNSYLVANIA.**

Philadelphia. Cedar Grove Manufacturing Co., 61st avenue and 21st street. Towels, wash and scrub cloths. (Purchased Walter McGrgero's plant.)
Philadelphia. Moss & Webb., Mascher street, below Lehigh avenue. Added three new Crompton & Knowles looms. (Successors to Boothroyd & Webb.)

## WOOLEN

**CONNECTICUT.**

Danielson. Brigham Woolen Co. H. Prescott Brigham. Fred L. Brigham, superintendent. Dress goods. 4 sets; 25 looms. (S) (D & F) Kenyon, Hogg & Capwell, N. Y., s. agts. Purchased the Elmville Woolen Mill.)
Montville. Monarch Woolen Mills. $80,000 ($42,000 paid in.) (Operate plant formerly known as Cochegan Woolen Mill.)
Stafford Springs. The Fabyan Woolen Company. Incorporated with capital stock of $200,000, succeeds business of Rawitzer & Bro. Herman Rawitzer, president; Chas. H. Meyers, Jr., treasurer. Installed new 200 h. p. boiler.
Staffordville. Garland Woolen Co. J. H. McCarthy, treasurer and agent; Chas. R. Newton, superintendent. Men's wear, suiting. Geo. Gifford, N. Y., s. agt. J. H. McCarthy, buyer. (Formeerly the Staffordville Woolen Co.'s mill. 3 sets; 25 looms.)

**MAINE.**

East Madison. Maine Spinning Company. $100,000. Edwin Gledhill, president; N. A. K. Brooks, treasurer. Yarns. (In plant formerly leased by Lakeside Woolen Mills.)
West Buxton. Brier, W. & R. Men's wear woolens, cassimeres and overcoatings. 2 sets; 10 looms. Duval & Cone, N. Y., s. agts. (W) (D) (Formerly the Berryman Mill.) (8/04)

**MASSACHUSETTS.**

Auburn. Ettrick Mills. $250,000. Incorporated to operate plant Hogg Carpet & Manufacturing Co.

Blackinton. Blackinton Mfg. Co. $125,000. Emil Kipper and others. Purchased plant formerly operated by Waterhouse & Buffum.
Caryville. Taft Woolen Co. Incorporated with capital stock of $220,000, successors to Taft, Murdock & Co. L. Herbert Taft, president; A. E. Bullard, treasurer and D. Bigwood, superintendent.
Clinton. Nashua Valley Mills. William Rodger, president and general manager; Charles G. Bancroft, treasurer; William Poole, secretary. New company formed to operate the Clinton Worsted Co.'s plant.
Holyoke. Slack, W. H. H. & Bro. (Springfield, Vt.) purchased plant of the Grosvenor Woolen Co. and operate same as an addition to plant at Springfield.
Medway. Medway Woolen Company. Incorporated with capital stock of $15,000. Fred R. Smith, president; Frank C. Smith, treasurer. Operate mill formerly known as Senior & Singleton Co.

**NEW JERSEY.**

Somerville. Glen Rock Woolen Mills Co. $50,000. T. C. Hagaman, president and general manager. (To operate plant formerly run as Somerville Woolen Mills.)

**NEW YORK.**

Stockport. Stockport Fibre Co. $12,000. B. F. Haigh, Edward Tinker and James W. King. Cotton and wool shoddy. (To operate the Rossman Mill.)

**OHIO.**

Cleveland. Forest City Woolen Mill Co. Incorporated to operate Saeltzer Woolen Co.'s mill. Manufacture fine shoddies and extracts.

**OREGON.**

Albany. Bannockburn Mfg. Co. Charles Coopey, president; H. M. Grant, secretary and treasurer. (Formerly Albany Woolen Mills.) Sell direct.

**PENNSYLVANIA.**

Aston Mills. May Manufacturing Co. Cotton and woolen goods and jeans. 400 looms. (E) (D) (Formerly Rhodes Bros. Mills.)
Downington. Rockstone Mills Co. D. W. Northrop, president; M. M. Northrop, vice-president; S. W. Latcher, secretary and treasurer; Thomas F. Nutt, manager. (Operate plant formerly run by William Souls' Sons.)
Millville. Skerry, A. T. & Co. Purchased Enterprise Worsted Mill and operate same.
Philadelphia. Birch, Frank B. & Son. Adams and Jasper Streets. Wool velvet and wool ingrain carpets. 13 sets. (Formerly plant of James & Geo. D. Bromley.)
Philadelphia. Erhard Biswanger Sons Company. Incorporated to operate plant of late E. Biswanger.
Philadelphia. Bromley Worsted Spinning Co. Indiana Ave. & A St. $100,000. Thomas Bromley, Jr., president and buyer; Geo. Bauer, superintendent. Worsted yarns for carpet and dress goods trades. 3 sets, 3 combs, 3,000 worsted spindles (English system). (Formerly spinning department of The Bromley Bros. Carpet Co.)
Philadelphia. William Dodd, taken over business formerly run by Dodd & Leibert, Mascher & York Sts. Carpets.
Philadelphia. Krook & Bruch Co., Ltd. Succeeded by Robert Krook.
Philadelphia. Philadelphia Carpet Company. 5th & Columbia Ave. $100,000. F. W. Doerr, president; P. Doerr, treasurer. Velvet carpets. Sell direct. (Formerely Young, Davis & Co.'s plant.) 20 looms.

**RHODE ISLAND.**

Woonsocket. Falls Yarn Mills. Incorporated with capital $50,000. (Formerly co-partnership.)

**TENNESSEE.**

Cumberland Gap. Cumberland Gap Woolen Mills. $10,000. A. B. Kesterson, president; C. F. Eager, treasurer; J. A. Login, superintendent. (Incorporated to operate plant formerly run by A. B. Kesterson.)

**NOVA SCOTIA.**

Eureka. Nova Scotia Woolen Mills, Ltd. $150,000. M. H. Fitzpatrick, president; A. J. Chisholm, treasurer. Tweeds, costume cloths and blankets. 3 sets; 12 looms. (New company formed to operate plant formerly run as the Eureka Woolen Mfg. Co.)

## KNIT

**CONNECTICUT.**

Putnam. Putnam Knitting Mills. $50,000. John F. Brooks, president; Robert G. Harris, treasurer. Children's hosiery. Sell direct. (S) (D) (Consolidation Home Knitting Mills (Boston) and Brunswick Knitting Co. (New Brunswick, N. J.)

**DELAWARE.**

Wilmington. Vassar Knitting Mills, 405 E. 13th street. Ribbed underwear, cotton, woolen and mixed; 66 knitting and 75 sewing machines. Critten, Clift & Co., N. Y., s. agts. (Formerly Henry M. Love's Mill.)

**MASSACHUSETTS.**

Lowell. Waukenhose Knitting Co. $60,000. G. W. Haskell (Boston) treasurer; F. A. Dutton, superintendent. Men's full regular and seamless hosiery. (Operate plant formerly run by Waukenhose Mfg. Co.)
Quincy. Quincy Knitting Mills. Arthur S. Weixler. Ladies', men's, misses' and youths' sweaters and jackets. (Operating plant formerly run as the Cambridge Knitting Mills.) Old machinery discarded and new installed.)

**MICHIGAN.**

Ypsilanti. Hay & Todd Manufacturing Co. Renamed the Ypsilanti Underwear Co. J. B. Colvan, president; S. B. Hutchinson, vice-president; W. L. Pack, secretary and treasurer.

**NEW YORK.**

Arcade. Fashion Knitting Co. Incorporated by Messrs. Crouse & Valasko; succeeds Fashion Knitting Mill Co. Start operations Dec., 1904, making women's and children's underwear. Operate 70 knitting and 100 sewing machines.
Cohoes. Fitwell Knitting Co. $60,000. Nathan Hatch, president and general manager; J. S. Friedman, treasurer; Walter Buck, secretary and resident manager. Cotton and wool merino and Jersey ribbed goods for men and children. 10 sets; 2360 cotton spindles; 72 knitting machines; 95 sewing machines. Operating plant formerly known as the Riverside Knitting Mills and added 16 new knitting machines. Start up during December.
Fort Hunter. Nottingham Fabrics Co. Linings for kid gloves and suspensory cloth. 80 spindles and 11 knitting machines. (Operating Dexter Silk Mill.)
Geneva. Union Textile Co. Worsted sweaters and cardigans. (Operate plant formerly run by Geneva Knitting Co.)
New York. Colonial Knitting Mills, 145-149 Centre street. $10,000. J. L. Shuldener, president; Wm. Feinberg, treasurer; S. Feinberg, secretary. Full fashioned wool and worsted ribbed and Shaker sweaters, blouses, etc. (Purchased Hudson Knitting Works, 147 Lispenard street and removed to above address.)
Utica. Genessee Underwear Co. Wm. E. Lewis, president; John B. Whitten, treasurer;; David M. Rankin, manager. Underwear. (Successors to Fisher Textile Co.)
West Sand Lake. McLaren Knitting Company. Incorporated with $10,000. John R. McLaren, president and agent; John Trainor, treasurer. (Succeed J. &. R. McLaren.)

**NORTH CAROLINA.**

Fayetteville. Algodon Knitting Mills. F. H. Cotton, proprietor. Started operations August 1st, making misses' and ladies' seamless hose. 36 machines. (Formerly Lafayette Knitting Mills.)
Malee. Malee Knitting Mill Co., Inc. $10,000. Operate plant formerly run by G. C. Baldwin.
Newbern. Blades Hosiery Mills. John H. Weddell, superintendent. Seamless cotton hosiery. (Succeeds Southern Hosiery Mills.)

**OHIO.**

Cleveland. United Knitting Company, Inc. Capital, $200,000. J. C. Sampliner, president; H. Friedman, treasurer; Fred Friedlander, superintendent; Mittens and gloves. Operate 600 knitting and 20 sewing machines. (Consolidation of H. Friedman & Co., N. J. Rich & Co., Central Knitting Co. and Bamberger & Newman.)

**PENNSYLVANIA.**

Allentown. Swissonia Knitting Mills. $12,000. F. Hardcastle, president; J. J. Taylor, treasurer, superintendent and buyer. Ladies' ribbed underwear and union suits. 15 knitting machines. (Formerly plant of Clinton Knitting Co.)
Norristown. Preissler, Herman. Purchased Mr. Watt's interest in the Home Knitting Mills and continued plant, selling goods direct.
Reading. Consolidated Knitting & Spinning Mills Co. $200,000. (Consolidation Empire Hosiery Mills and Reading Spinning Co.)

Reading. Gem Knitting Mills Co. (Formerly Geiger & Groff.) Removed from 17 South Front street to Moss & Douglass streets. Milton C. Geiger, president; Rowland G. Scarlet, treasurer.
Reading. Reading Knitting Mills. Leippe & Davies, proprietors. (Formerly Gaenzle & Leippe.)
Somerset. Cook & Emert. Operate plant formerly run by Fink & Emert.

**TENNESSEE.**

Morristown. Wood Knitting Co., Incorporated with capital of $10,000 to operate plant started by J.L. Wood Company.

**WISCONSIN.**

Milwaukee. Imperial Knitting Co. $50,000. A. H. Dennhardt, president; Wm. J. Morgan, vice-president; O. A. Fink, secretary and treasurer. (Incorporated to operate plant formerly run as Imperial Knitting Mills.)
Stevens Point. Racine Underwear Mills. $6.500. Louis Brill, president; G. E. McDill, treasurer. High grade underwear. (Operate mill formerly run by Racine Knitting Co.)
Two Rivers. Zulu Hosiery Mills. Incorporated with capital stock of $34,000.

## SILK

**NEW JERSEY.**

Paterson. M. P. Meinhard Co. Organized to operate Miller, Ward & Co's plant.
Paterson. Searing & Co. Essex Mill. (Partnership) E. P. Searing and R. H. Kempes. 36-in. Broad silks, taffetas and Peau de Soi. E. P. Searing, 87 Leonard street, New York, s. agt. (W) (Formerly Kempkes Bros.)

**NEW YORK.**

New York. Degen & Unger. (Successors to Jos. Riegelman.) Dress and cloak trimmings.

**PENNSYLVANIA.**

Philadelphia. Concordia Silk Co. $150,000. Alfred Coradi, general manager. Dress silks and ribbons. New York office 489 and 493 Broome street. (Operate plant formerly run by Scherr Bros.,failed.)
Philadelphia. Seidmann's Sons, Mfg. Co., David. Hereafter continued by David Seidmann's Sons.
Scranton. Black Diamond Silk Co. $50,000. (Successors to Morrison Silk Mfg. Co.) Taffetas.

## MISCELLANEOUS

**NEW YORK.**

Rochester. Andrew Bryson. Purchased Flower City Dye Works.

**PENNSYLVANIA.**

Philadelphia. Hulme, Clements & Co., 2803-07 Fairhill street. Bleachers' yarns, tapes, webbings, etc. (Formerly Hulme Bros. & Co.)
Philadelphia. Philadelphia Upholstery Moire & Silk Fininshing Co., Josephine and Oxford streets, Frankford. Mr. Sheridan, manager and superintendent. Finishing upholstery goods, moire work, finishing hair cloth, umbrella silks and waterproofing cloths. (Successors to Verbaken & O'Connor.)
Philadelphia. Trimble Dyeing, Printing & Finishing Co., Richmond and Tioga streets. John Williams, president; Geo. T. Williams, treasurer;; Henry C. Brooks, superintendent. Dye, print, mercerize and finish cotton piece goods. 4 machines. (Formerly plant of James Martin & Co.)

**RHODE ISLAND.**

Woonsocket. Rhode Island Dyeing & Finishing Co. Incorporated with capital stock of $500,000 to operate plant of same name, incorporated under New Jersey laws.

# Enlargements and Improvements.

This list is not, by any means, a complete record of Enlargements and Improvements, for there is hardly a mil in the country but what has made some changes and improvements. The object is as far as possible to enumerate the more important and such as would have a bearing on the growth of the industry.

## COTTON

**ALABAMA.**

Anniston. Adelaide Cotton Mills. Installed 1200 new spindles.
Huntsville. Lowe Mfg. Co. New addition to No. 1 mill 140x50 feet; 10,000 spindles installed.
Sylacauga. Central Cotton Mills. New building erected for purpose of doubling capacity. Expect to have machinery (being installed) in operation by January 1st.

**ARKANSAS.**

Monticello. Monticello Cotton Mills. Addition built to mill and 2,500 additional spindles and 90 looms put in, increasing to 7,624 and 240 respectively.

**CONNECTICUT.**

Ballouville. Attawaugan Co. Installed 6 new filling frames and speeders in card room Ballou Mills.
New Haven. New Haven Web Co. Erected new building, 180x45 feet.
North Grosvenor Dale. Grosvenor Dale Co. To throw out approximately 38,000 mule spindles, which are being replaced with ring spindles. (Howard & Bullough Am. Mach. Co.)
Willimantic. Windham Mfg. Co. Installed about 2,000 additional spindles.
Windsor Locks. Montgomery, J. R., Co. New building 166x75 feet, 5 stories, erected. Razed old building to adjoin.

**GEORGIA.**

Atlanta. Exposition Cotton Mills. Addition built to main building, 100x275 feet. 9,000 spindles and complement of looms installed.
Atlanta. Gate City Cotton Mills. Addition made, completing card and picker rooms. Increased spindles to 10,000.
Banning. Hutcheson Mfg. Co. Installed 2,500 additional spindles, giving total 7,500 in plant.
Canton. The Canton Cotton Mills built addition 128x54 feet, doubled equipment (5,000 spindles and 210 looms).
Cochran. Cochran Cotton Mill Co. Addition built; installed 2,000 new spindles and 100 looms.
Columbus. The Eagle & Phoenix Mills. Added 3,000 more spindles.
Dublin. Dublin Cotton Mills. Installed 100 new looms.
Griffin. Griffin Manufacturing Co. New addition built. Added 10,000 spindles and about 400 looms. New mill operated by electricity.
Griffin. Rushton Cotton Mills. Installed additional machinery, increasing equipment to 12,000 spindles and 380 looms.
Hampton. Hampton Cotton Mills. Increased capital stock to $100,000. Capacity of plant doubled.
La Grange. Dixie Cotton Mills. Added 3,000 (H & B) spindles and 300 (C & K) looms.
Newnan. Newnan Cotton Mills. Installing 7,000 additional spindles.
Thomson. Smith, J. E. Cotton Mfg. Co. Issued additional stock. Installed 6,000 additional spindles and 200 looms, make Bag cloth.
West Point. Lang Manufacturing Co. Established No. 2 mill at Lanett, Ala. Incorporated with capital stock of $100,000; total equipment of 2,000 spindles, 1,000 twister spindles and 30 broad looms.
West Point. West Point Mfg. Co. About $50,000 expended in making repairs and improvements to the plant, including installation 10,000 spindles.

**KENTUCKY.**

Louisville. Louisville Cotton Mills Co. Increased capital stock to $400,000. Built addition to plant and installed new machinery. Total equipment of spindles now 11,440 ring and 9,408 mule.

**LOUISIANA.**

New Orleans. Alden Mills. Extended their three-story brick building some 75 feet; adding about 15,000 square feet floor space.

**MAINE.**

Augusta. Edwards Cotton Mill. Extensive repairs made, including new set pickers, moisteners and additions to electrical plant.

### MASSACHUSETTS.

Dodgeville. Hebron Mfg. Co. Addition built, brick, 50 by 70 feet, 3 stories and basement.
Fall River. Davis Mill. Increased capital stock from $500,000 to $600,000 and increased machinery equipment to 50,000 spindles.
Fall River. Durfee Mills. Addition to power plant; also replaced mules with 36 new spinning frames.
Fall River. Granite Mills. Replacing mules with nine new (Mason Machine Works) frames, 364 spindles each. To be ready for operation about January 1st.
Fall River. King Phillip Mills. New Whitin cards and Woonsocket M. & P. Co. speeders installed in No. 2 mill, and 32 Whitin frames in Mill No. 1.
Fall River. Pocasset Manufacturing Company. Replaced 16,000 mule spinners with 13,000 frame spindles.
Fall River. Sagamore Mfg. Co. Installed 72 new cards and 16 lappers in the plant.
Fall River. Stafford Mills. Installed 580 new looms during shutdown in summer.
Fall River. Union Mills. Replaced eight pair mules with Whitin spinning frames.
Great Barrington. Riverdale Mills Co. Addition 23 by 54 feet, 2 stories built for storeroom and cloth room.
Lawrence. Lawrence Duck Co. Extensive improvements included enlarging 4-story mill to 5, with flat roof and extension 80 by 75 feet. Also added new machinery.
Lowell. Massachusetts Cotton Mills. Addition 136 by 95 feet to picking and carding departments. Substituted modern for old machinery; 156 (Lowell) cards with drawing and slubbers to match, and Kitson pickers.
Methuen. Methuen Co. Addition 20 by 70 feet made to dye house. Installed new dyeing machine.
New Bedford. Potomska Mill Corporation. Replacing equipment in No. 2 mill with 25,000 (Dobson and Barlow) mule spindles.
North Oxford. Bartlett, Edwin, Co. Installed 1,200 additional spindles in mill.

### MISSISSIPPI.

Columbus. Tombigbee Cotton Mills. New machinery installed, including picking and spinning.
Magnolia. Magnolia Cotton Mills. Capital stock increased to $200,000, purpose, doubling plant.

### NEW HAMPSHIRE.

Nashua. Jackson Co. New addition 196 by 30 feet, 2 stories, built to No. 1 mill; also one 224 by 36 feet, 3 stories. Replaced old willow machines with 6 new automatic feeders.

### NEW YORK.

Cohoes. Harmony Mills. Extensive improvements made; about $100,000 expended.
New York Mills. New York Mills. Replaced corduroy finishing works, destroyed by fire, with new building.
Poughkeepsie. Northern Wadding Company. $50,000. Formerly at West Park, N. Y. Mill destroyed by fire and new one erected here.

### NORTH CAROLINA.

Charlotte. Fidelity Mfg. Co. Installed 2,000 new spindles, increasing to 10,000; also added new twister and card-room machinery.
Cliffside. Cliffside Mills. Additions made to cloth and finishing rooms, increasing to three stories. Installed 140 looms.
Concord. Odell Mfg. Co. Added about 10,000 spindles in the Buffalo mills, giving company a total of 42,600 spindles in all the mills.
Edenton. Edenton Cotton Mills. Addition 98 by 80 feet, two stories, built to mill and 2,240 additional spinning and 1,120 twisting spindles installed, giving total of 8,512 and 4,256 respectively. Have space for 2,500 more spinning and 1,250 twisting spindles, which they intend putting in next year.
Fayetteville. Holt-Williamson Mills. Addition built to mill and capacity of plant increased for manufacturing yarns.
Gastonia. Loray Mills. Doubled capacity of plant.
Graham. Carolina Mills. Erected new addition, 120 by 50 feet. Installed 8,000 new spindles and 250 looms.
Kings Mountain. Cora Cotton Mills. Installed 5,000 new spindles and 2,400 twisting spindles.
King's Mountain. King's Mountain Mfg. Co. Replaced small cards with 12-40 in. (Lowell) cards and also added one (Kitson) picker.
Laurinburg. Dickson Cotton Mills. Increased capacity of plant by addition of 2,000 ring spindles; 2 pickers, 8 cards, 1 slubber, 2 speeders and 2 (Foster) winders.
Norwood. Norwood Mfg. Co. Built an addition to mill and installed 7,000 additional spindles.
Ramseur. Columbia Mfg. Co. One story addition 50 by 88 feet erected. Installed new dyeing machine; also engine and dynamo.
Roxboro. Roxboro Cotton Mills. Addition built and 3,192 spindles added for making 20/2 warp and skein.
Wadesboro. Wadesboro Cotton Mill Company. Reorganized. C. M. Burns, president; I. H. Horton, secretary and treasurer. Installed new boiler plant.
Worth. Harden Mfg. Co. Addition 128 by 50 feet, two stories, brick, built, and installed 2,080 additional spindles and one twister.

### PENNSYLVANIA.

Chester. T. I. Birkin Co. New bleach house built, 30 by 40 feet. New machinery installed.
Chester. Lincoln Mills. Installed new boilers. Contemplate adding 5,000 ring spindles.
Clifton Heights. Colonial Manufacturing Co. Welsh & Dick, proprietors. Installed new dyeing machinery and bleachery in plant; also 11 looms.
Philadelphia. Armure Tapestry Mills. Purchased plant of New York Tapestry Mills, 1822-24 Cadwallader street, and operate same in connection with their former plant.
Philadelphia. Binder & Ellis, Allegheny Avenue and C street. Contemplate installing 30 more 72-inch looms and 80 special looms.
Philadelphia. Campbell, Richard C. Started manufacturing novelties in addition to damasks. New looms installed.
Philadelphia. Thomas Davenport. Started manufacturing curtains and added two new looms.
Philadelphia. Enterprise Tapestry Co., 1543 Ruan street. (Formerly Mustin, Davis & Co), Enlarged capacity of former plant.
Philadelphia. Henry, Thomas, Jr. New machinery installed in plant, replacing that destroyed by fire.
Philadelphia. Sibson & Stern. New mill 200 by 40 feet, one story and basement. Stanton avenue and Wyoming street.
Philadelphia. Standard Mills. R. Megowan & Son. Rebuilt plant damaged by fire and replaced damaged machinery. Installed new sprinkler system.
Wilkesbarre. Wilkesbarre Lace Mfg. Co. Building new storehouse, 50 by 120 feet, 3 stories, brick.
Wilkesbarre. Wyoming Valley Lace Mills. Enlarged power plant. Installed one new boiler, 150 horsepower, return tubular.

### RHODE ISLAND.

Washington. Washington Mfg. Co. New bleach house erected.
Westerly. Lorraine Mill. Increased carding and spinning departments. Erected an addition 46 by 35 feet, 2 stories.

### SOUTH CAROLINA.

Anderson. Brogon Mills. Increased capital stock to $1,000,000. Extensive improvements made to the plant; now operate total of 25,000 spindles and 1,050 looms.
Anderson. Cox Mfg. Co. Capital stock increased to $200,000. Addition built and about 12,500 spindles will be installed. Expect to have in operation January, 1905.
Chester. Springstein Mills. Additional building, 116 by 50 feet, 2 stories, being erected. Will install 6,048 new spindles with necessary opening and preparing machinery; also some dyeing and finishing machinery. Expect to have addition running by first of year.
Darlington. Darlington Mfg. Co. Addition built and machinery installed; increased equipment to 53,000 spindles and 1,400 looms.
Dillon. Maple Cotton Mills. Addition built to plant and 8,500 ring spindles installed for making 20 to 30s hosiery and 2 ply yarn.
Easley. Glenwood Cotton Mills. Installed 2,000 spindles and 30 looms, giving total of 18,240 and 446 respectively.
Fort Mill. Millfort Mfg. Co. Built an addition, 100 by 60 feet, two stories. Installed 5,000 additional spindles and 150 gingham looms.
Gaffney. Gaffney Mfg. Co. Added 210 (Crompton & Knowles) looms, giving total of 1,650 in plant.
Greenville. American Spinning Company. Added 6,000 more spindles.

Greenville. Carolina Mills. Increased the capital stock to $100,000. Installed 160 looms for weaving print cloths.

Greenville. Woodside Cotton Mills. Additional mill built. Expect to have in operation January, 1905. Adding 30,000 spindles and 900 looms, which will give total of 42,000 spindles and 1,200 looms.

Greers. Victor Manufacturing Company. New mill built, 130 by 430 feet, four stories. Equipped with 25,000 spindles and 600 looms, for making fancies and various light weight goods. To install 100 more looms later.

Honeapath. Chiquola Manufacturing Company. Capital stock increased to $400,000. New building erected, 130 by 150 feet. Added 24,480 ring spindles and 600 looms, giving total, manufacturing wide and narrow print cloths, of 40,320 spindles and 1,000 looms.

Rock Hill. Arcade Cotton Mills. Increased capital stock $30,000. Adding 6,000 spindles, increasing number spindles to 12,210.

Spartanburg. Beaumont Mfg. Co. New addition built, 230 by 78 feet. Installed 6,256 new spindles and 144 looms for converter cloth.

Union. Monarch Cotton Mills. Added 10,000 mule spindles and 250 Draper looms.

Williamston. Williamston Mills. Increased charter from $200,000 to $500,000 and paid in capital from $200,000 to $300,000. Installed additional machinery, increasing spindles from 14,336 spindles and 300 looms to 25,984 spindles and 600 looms.

**TENNESSEE.**

Humboldt. Humboldt Cotton Mills. Increased capital stock. Built addition to mill and added 5,000 new spindles.

**TEXAS.**

Corsicana. Corsicana Cotton Mills. $100,000. Organized to take over plant of Corsicana Cotton Mill.

Waxahachie. Waxahachie Cotton Mills. Installed additional looms, added manufacture of towels. Built standard cotton warehouses with complete sprinkler system.

**VERMONT.**

Springfield. Holmes, J. C. Co. Addition built to mill, 45 by 65 feet, 2 stories, to be used for beaming, twisting and winding. Also enlarged dye and boiler houses and installed 125 h. p. boiler.

**WISCONSIN.**

Janesville. Rock River Cotton Co. Installed new machinery to replace that damaged or destroyed by fire.

## WOOLEN

**CONNECTICUT.**

Somerville. Somerville Woolen Mfg. Co. New boiler and engine installed for additional power; also built new smoke stack, 125 feet.

Yantic. Yantic Woolen Mills. New boiler plant erected and chimney.

**GEORGIA.**

Rossville. Park Woolen Mills. Addition built 150 by 25 feet for dye house and stock room. Installed 1 set new cards, 4 mules and 19 looms. Also put in new 300 h. p. engine.

**INDIANA.**

Mishawaka. Mishawaka Woolen Mfg. Co. Installed $30,000 worth of new machinery.

**MAINE.**

Dexter. Wassookeag Woolen Co. Addition built, 40 by 36 feet, one story, for finishing department.

Oakland. Oakland Woolen Co. Installed 125 horsepower engine, rendering plant independent of water power.

Oldtown. Maine Woolen Co. Organized to operate plant of Ounegan Woolen Mills. Added two new sets cards and two new 336 spindle mules.

Waterville. Riverview Worsted Mills. Installed 12 Knowles looms, increasing to 72 broad ones.

**MASSACHUSETTS.**

Barre. Barre Wool Combing Co., Ltd. New storehouse built, 100 by 80 feet, 6 stories.

Chicopee. Burtworth Carpet Co. New building, 178 by 77 feet, one story, erected: also new dye house, 132 by 32 feet, one story.

East Dedham. Cochrane Mfg. Co. Built addition, 70 by 80 feet, 2 stories. Installed some new looms.

Fitchburg. Shirreffs Worsted Co. (North Chelmsford) New mill erected here. Expect to remove to same about Dec. 1st.

Franklin. Mine Brook Mfg. Co. E. Emmons Waite, treasurer. Built new mill.

Franklin. Ray Fabric Mills. Installed 2 new sets cards. Also built new storehouse, 96 by 40 feet.

Holliston. Darling Woolen Mills Co. Built new dye house, 44 by 22 feet and put in 2-12 string piece dye kettles.

Indian Orchard. Rhode Island Worsted Co. Installed 20 additional Crompton & Knowles looms.

Jefferson. Eagle Lake Woolen Co. New building, 85 by 45 feet, 4 stories, for picker, dryer and gauze rooms and weaving.

Lawrence. Walworth Bros. New mill erected and installed from 50 to 60 new looms, giving total of 130 to ladies' worsted dress goods.

Monson. Faulkner, F. Leased Lancey Mill and operates 3 sets, 20 broad looms on woolens. Finishing done at Stafford Springs, Conn.

Pittsfield. Pontoosuc Woolen Co. New building, 2 stories, 100 by 60 feet, built for dressing room. First floor for making warps, second spooling.

Pittsfield. Taconic Mills. Additions made to spinning, carding and weave room.

Plymouth. Mabbett, Geo. & Sons Co. Addition, 100 by 50 feet, one story built for finishing room.

Webster. Chase Mill. Addition, 132 by 88 feet, 3 stories, built. New carding, spinning and finishing machinery installed; also burling and mending departments.

Webster. Intervale Mills. Increased plant to 16 sets and 96 looms.

**MICHIGAN.**

Sault Ste. Marie. Soo Woolen Mills. Addition built to the mill. Installed 480 new spindles. Now operate 2 sets cards and 7 looms.

**MINNESOTA.**

Rushford. Webster, W. W. Addition built, 40 by 50 feet, and 2 sets cards installed.

**MISSOURI.**

California. California Woolen Mills. Increased capital stock. Removed to new building and installed additional machinery in same.

Sedalia. Sedalia Woolen Mill Co. Incorporated to operate the Sedalia Woolen Mill. Frank Hugelman, agent;; B. A. Churchill, superintendent. Cassimeres, flannels, blankets, 1 set, 7 looms. Propose installing another set cards and adding pants factory with capacity of 20 dozen per day.

**NEW HAMPSHIRE.**

Franklin Falls. M. T. Stevens & Sons Co. Purchased Walter Aiken's Sons' mill and operate same in connection with their old plant.

Harrisville. Cheshire Mills. Building new dye house and installing a 150 horsepower boiler.

Hinsdale. Halle & Frost Mfg. Co. Additional machinery installed; also 2 new 125 horsepower steam boilers.

Keene. Faulkner & Colony Mfg. Co. New dye house, 80 by 60 feet, 2 stories, brick.

**NEW JERSEY.**

Camden. Eavenson & Levering. New buildings erected and plant removed from Philadelphia. Main building, one and two stories, 291 by 99 feet, with boiler and engine house, 68 by 40 feet.

Garfield. Garfield Woolen Mills. New story added to building, put in new pickers, cutters and cards.

Passaic. Garfield Worsted Mills. New addition built, 100 by 125 feet, one story, for finishing and dyeing; installed several new machines.

Paterson. Colonial Woolen Co. Installed new carding machine, self-acting mules and number double boarded looms.

**NEW YORK.**

Albany. Huyck, F. C. & Sons. Built 75 foot addition to plant and installed 11 new looms.

Amsterdam. Shuttleworth Bros. Co. New addition 66 by 65 feet, brick, 3 stories, under construction, November, 1904.

Little Falls. Adirondack Woolen Company. Incorporated with capital stock of $50,000. Built additional story, making it four, new elevator shaft built; and added new picking machinery. (Successors to Little Falls Wool Extract Co.)

Middleville. Nelson Dedicke Felt Co. Addition built to plant and new machinery installed.

Rochester. Allen Woolen Mills. Installed new pickers and dyeing machinery.

Schaghticoke. Schaghticoke Mills Co. Installed 2 new mules and 10 looms.

### OHIO.

Cleveland. Cleveland Worsted Mills Co. New machine shop built. Installed 40 more looms.

### PENNSYLVANIA.

Bridgeport. Barber, E. L. Added 1 set 60-inch cards, making total of 5 in operation.

Bridgeport. I. W. Smith Woolen Company. Incorporated capital stock $100,000. I. A. Smith, president; L. W. Smith, treasurer. (Continue plant of I. W. Smith.) Built addition to mill and added 3 sets cards and 15 looms.

Chester. Geo. Grayson, Darby, Penn., leased the Highland Mills Company's plant, and operate same from month to month.

Darby. Verlenden Bros. Additional set cards put in.

Doylestown. Doylestown Mills, Inc. $60,000. H. L. Scheetz, president; M. K. Dungan, treasurer; John Yardley, secretary. Worsteds. (Reorganization of the old Doylestown Worsted Co.

Milltown. Dutt, Fred A. New mill erected and one new set cards installed, giving plant total of two sets on 3 ply carpet yarn.

Norristown. Wm. Watt & Son. Addition, 30 by 80 feet, 4 stories, built to mill. New spinning and carding machinery and looms put in.

Philadelphia. Ardross Worsted Company. Installed 10 new looms.

Philadelphia. Brighton Worsted Company. Howard and Palmer streets. Adding 6 new Knowles looms.

Philadelphia. Bromley, James. New one-story mill erected at Adams and Leiper streets.

Philadelphia. Cameron, A. J. & Co. Added one set drawing and more spinning frames.

Philadelphia. Cochrane, Charles P. New mill, 200 by 54 feet, two stories, with rear addition, 150 by 78 feet, erected northwest corner Butler and Jasper streets.

Philadelphia. Dunlap, J. S. Carpet Co. Addition built, 113 by 178 feet, two and three stories.

Philadelphia. Erben, Harding & Co. Addition, one story, brick, 109 by 24 feet, to Tacony Mill; also leased part of E. H. Godshalk Co. plant, 23rd and Hamilton streets, to install new machinery.

Philadelphia. Erskine, Alexander. Added 10 Crompton & Knowles looms giving total of 30 in plant on shawls, blankets, etc.

Philadelphia. Folwell Bros. & Co., 3rd and Cambria streets. New dye house, 64 by 58 feet, to be erected.

Philadelphia. Fowler Waste Manufacturing Co. (Succeeds Clapp & Fowler Waste Co.) Continues business under same management. New machinery installed replacing that damaged by fire in September.

Philadelphia. Hall Yarn & Waste Manufacturing Co. Rebuilt mill damaged by fire and made enlargement of 26 by 50 feet.

Philadelphia. Manningham Worsted Mills. Germantown. Installed additional set cards and other machinery.

Philadelphia. Milne, C. J. & Sons, 10th and Washington avenue. New mill erected, 200 by 50 feet, four stories.

Philadelphia. Newbold & Co. Removed to 1832 East Clearfield street. Remodeled building and added new machinery.

Philadelphia. Roosevelt Worsted Mills, 2025 Naudain street. Added two more floors to plant and installed additional carding, combing and twisting machinery for worsted yarns.

Philadelphia. Shapcott & Weaver. Hoffman Mill, Angora. Installed 3 sets cards and other machinery for making own yarns. Also operate 5 broad looms.

Philadelphia. Southwark Mills Co. Improvements made in dye house, including addition of indigo dyeing plant for dyeing union goods in the piece;; also raw stock.

Philadelphia. Tobin & Astley, 4155 Frankford avenue, Frankford. Re-equipped plant with new looms for manufacturing worsteds, men's wear.

Philadelphia. Unity Woolen & Worsted Co. Unity & Leiper streets. Added 20 new looms and warping, twisting and winding machinery.

Philadelphia. Walter, F. W. & Co. Nicetown Mill. Installed 2 more garnett machines.

Philadelphia. Wolstenholme, Thomas, Sons & Co., Frankford avenue and Westmoreland street. Alterations and additions made to scouring department; also built new boiler house and improved power plant.

Philadelphia. Yorkshire Worsted Mills. Added 20 more looms.

Tunkhannock. Winola Worsted Yarn Co. New buildings to be erected and 4 more cards put in.

West Conshohocken. Merion Worsted Co. Two-story brick building erected for office purposes. Old building to be used as addition as well.

### RHODE ISLAND.

Glendale. Glendale Woolen Mill. Addition built 54 by 75 feet, added 3 sets cards and 2 mules.

Oakland. Coronet Worsted Co. New building, 200 feet long, 3 stories, under construction. Will add 50 looms.

Oakland. Oakland Worsted Company. Addition built, 120 by 65 feet, one story and basement for weaving and finishing.

Olneyville. Earnscliffe Mills. New addition, 220 by 58 feet, 2 stories. About 40 additional looms to be put in; also dressing, winding and spooling departments.

Providence. Paramount Worsted Mills. Ten new looms put in.

Washington. Livingston Worsted Mills. Separate building equipped for dyeing and finishing woolen piece goods, men's wear, etc.

Westerly. Pawcatuck Woolen Mills. New carding machinery and rotary press installed.

Woonsocket. Montrose Woolen Co. Replaced 14 Crompton looms with new Knowles looms.

### TENNESSEE.

Athens. Athens Woolen Mills. Increased capital stock to $100,000. Built an addition to plant and added 3 sets cards and 100 looms, making total of 7 sets and 211 looms in mill.

Chattanooga. Extract Wool & Merino Co. Erected new mill building, 100 by 200 feet, 3 stories; also new two-story engine and boiler room.

Cleveland. Cleveland Woolen Mills. Erected two-story building, 60 by 90 feet, for picker room and store room for rags.

Jefferson City. Jefferson City Woolen Mills. Built brick addition.

Knoxville. Knoxville Woolen Mills Company. Increased capital stock from $600,000 to $750,000.

Springfield. Springfield Woolen Mills. Erected new warehouse, 150 by 50 feet. Also added one set cards, two 350 spindle mules and 16 broad looms.

### VERMONT.

Springfield. Slack, W. H. H. & Bro. Carbonizing capacity increased. New addition, 200 by 40 feet.. Also added 3 new pickers, increasing to 17.

Winooski. Winooski Mill (American Woolen Co.) Installed additional finishing department; 10 (Hunter) fulling mills, 4 washers, extractor, dryer and two shears.

### VIRGINIA.

Fredericksburg. Melville Woolen Co. One-story addition made to carding and spinning department. New turbine water wheel installed; also cloth drying machine.

### WEST VIRGINIA.

Martinsburg. Martinsburg Worsted & Cassimere Co. Additional carding and spinning machinery put in.

### ONTARIO.

Bolton. Bolton Woolen Mill. Rebuilt plant destroyed by fire.

Guelph. Guelph Worsted Spinning Co. Installed new set cards and mules.

## KNIT

### DELAWARE.

Wilmington. Sutphen, John L. Enterprise Hosiery Mills. Removed to larger building. Installed a new 10 horsepower engine and 18 horsepower boiler.

### GEORGIA.

Columbus. Georgia Mfg. Co. Installed 2,500 spindles for purpose of making own yarns.

Marietta. Marietta Knitting Co. Made addition of 1,800 square feet and installed machinery increasing output to 700 dozen pairs half hose daily.

### ILLINOIS.

Chicago. Friedlander, Brady & Co. New building, four stories, under construction. Expect to start April, 1905.

### INDIANA.

Elkhart. Lakeside Knitting Co. New buildings erected. Plants at Michigan City and Elkhart have been consolidated. Main building is 300 by 60 feet, brick. Production largely increased.

Fort Wayne. Wayne Knitting Mills. Additional story built to mill. Some machinery added, also.

### MARYLAND.

Hagerstown. Blue Ridge Knitting Co. Increased capacity. Installed 50 "Acme" knitting machines.

### MASSACHUSETTS.

Northampton. McCallum Hosiery Co. An addition, 60 by 60 feet, two stories, erected. Installed dye plant.

### MICHIGAN.

Hastings. Hastings Wool Boot Co. Added 3 new sets cards.

Lexington. Fead, John L. & Sons. Installed considerable new machinery, including a generator for furnishing own lights.

St. Joseph. Cooper, Wells & Co. Built 3 story brick warehouse, 50 by 150 feet, heavy mill construction, equipped with automatic sprinklers. New dye house, 48 by 153 feet, nearly completed. To be equipped with latest improved machinery. Also added new 225 horsepower engine with a direct connected 200 horsepower generator for light and power.

### NEW HAMPSHIRE.

Manchester. Rief, Geo. W. Hosiery Co. Installed 8 new knitting machines; also ribbers and loopers.

### NEW YORK.

Brooklyn. Eagle Knitting Mills, 591 Bushwick avenue. Boiler and engine installed to operate plant by steam. Also put in 5 new knitting machines( for sweaters of all kinds) and one winder.

Brooklyn. Ragosin Spinning & Knitting Mill, 172 Nibblen street. Installed one set of cards, make 2/20 yarn for ladies' and children's blouses.

Brooklyn. Rubenstein Bros., 378 Wallabout street. Installed five additional knitting machines.

Brooklyn. Saxonia Knitting Works. M. Simon, proprietor. Removed to larger quarters at 685 Park avenue. Installed 4 new machines, making total of 12.

Brooklyn. Schaffer, I. London Knitting Mill. New three-story building erected at 61 Montrose avenue avenue, removed to same.

Brooklyn. Victor Knitting Mill. Removed to 1226 Middleton street. Added five new knitting machines.

Cohoes. Tivoli Knitting Mills. Installed additional set cards, increasing to 20.

Gloversville. Gloversville Knitting Co. Addition built, 100 by 54 feet, with ell, 20 by 29 feet. To make room for overcrowded plant.

Perry. Perry Knitting Company. Installed three additional sets 60 inch cards.

Philmont. McNamee Mesh Underwear Co. Installed 12 new knitting machines.

Richfield Springs. Waiontha Knitting Company. New building, 120 by 50 feet, 3 stories. Expect to be completed January 1st.

Utica. Richelieu Knitting Company. Increased capital stock to $75,000.

Utica. Utica Knitting Co. Building large warehouse, 120 by 100 feet, 3 stories.

Valatie. Harder Manufacturing Co. Purchased the Wild Cotton Mills. Installed carding, spinning, knitting and finishing machinery and operate with their local plant, making men's high grade ribbed underwear; also put in 25 new knitting machines in old plant.

### NORTH CAROLINA.

Chapel Hill. Blanche Hosiery Mill Co. Installed 20 new Mayo machines.

Durham. Durham Hosiery Mills. Mill No. 2, half hose for men, 46 knitting machines (to be increased) and one sewing machine. Started September, 1904.

Newton. Newton Hosiery Mills. D. J. Carpenter, proprietor. Addition built and plant at Valdese removed here.

Raleigh. Melrose Knitting Co. Added dye house, 75 by 42 feet. Equipped with latest improved machinery.

Salisbury. Salisbury Hosiery Mills, incorporated as Salisbury Hosiery Co., capital stock $24,000. Some additional machinery put in.

Scotland Neck. Scotland Neck Cotton Mills. Building addition, 130 by 40 feet, 2 stories, for offices, cloak room and other purposes. Will also add some new machinery.

Tryon. Tryon Knitting Mill. An addition, 150 by 50 feet, built to the mill.

### PENNSYLVANIA.

Ashley. Ambrose West. New addition erected and machinery added.

Clifton Heights. Columbus Knitting Mills. Installed 10 additional machines.

Fleetwood. Kelchner, D. F. Building addition to mill.

Hamburg. Fisher, W. Scott & Son. Installed 3 new knitting machines, giving total of 10 knitters and 3 sleevers in operation.

Hazleton. Hazle Knitting Mills. Added ten new sewing machines.

Herndon. Geo. W. Malick, Lyons Knitting Mill. Removed plant from Lyons Station. To double output.

Mechanicsburg. Black Rock Knitting Company. Removing entire plant of Potomac Knitting Co. (Shepherdstown, W. Va.), to the mill and also adding 20 new knitting machines.

Newport. H. A. Romberger. Addition built to plant and 38 new knitting machines put in. Manufacture hosiery.

New Ringgold. Saul, Bible & Young. (Formerly at Pottsville.) Built new mill at this place; 19 knitting and one sewing machine installed.

Norristown. Star Knitting Mills, Lewis E. Taubel, proprietor. Addition, 80 by 45 feet, 3 stories and basement, built to mill.

Philadelphia. Alexander Allen. Removed plant from Baldwinsville, N. Y., to Randolph street and Columbia avenue. Operates 38 knitting and 25 sewing machines on ladies' vests.

Philadelphia. Allegheny Hosiery Mills, 1931 Hope street. Removed from Trenton avenue and Norris street. Added 10 new (National) ribbers.

Philadelphia. American Textile Co., Church Lane and Lena street. Installed 10 knitting machines for making 136 needle half hose.

Philadelphia. John Blood & Bro., Trenton and Allegheny avenues. New building, 26 by 42 feet, three stories, brick, for addition to their plant.

Philadelphia. Brownhill & Kramer. Removed to Memphis and Columbia avenue. Built an addition, 85 by 60 feet. Increased machinery to 60 ribbers and 100 knitting machines.

Philadelphia. Carvin Knitting Company, Mascher and York streets. Added 22 new Mayo and 10 McMichael & Wildman ribbers.

Philadelphia. Elk Knitting Co., 10th and Diamond streets. To increase production for 1905 25 per cent.

Philadelphia. Fairhill Hosiery Co., 1226 Orkney street. Purchased American Knitting Co.'s (Waltham, Mass.) machinery and removed here.

Philadelphia. German-American Hosiery Co. Capital stock increased from $150,000 to $200,000.

Philadelphia. Hall, L. C., Jr., & Co. Removed to larger quarters in old Sanquoit Mill, Randolph street and Columbia avenue.

Philadelphia. Novelty Knitting Mills, Feld & Bacharach, proprietors. Removed to 70 and 72 North 4th street. Added 12 new machines, giving total of 75 in plant.

Philadelphia. Saxony Hosiery Co., 2507 Potter street. Added 15 new machines, giving plant total of 175.

Philadelphia. Vesper Hosiery Mills, 1214 Crease street. Ten new (Standard) machines installed.

Pittston. Shepparu, Chas. W. New plant erected replace Sheppard Hosiery Co.'s mill destroyed by fire.

Reading. Nolde & Horst. New dye house, 120 by 30 feet, one and two stories erected and addition, 110 by 100 feet, three stories and basement, to main building.

Reading. Searles Knitting Co. Installed 20 new machines.
Shamokin. Taubel, W. F. Addition, 125 by 65 feet, 3 stories, built.
South Bethlehem. Halcyon Knitting Mills. Contemplate adding dye house.
Towanda. Towanda Knitting Company. Hosiery (Formerly W. J. Young's mill.) Installed dye plant.
Williamstown. Durbin, J. W. & Sons. Installed several new full automatic Hemphill machines.
Womelsdorf. Heister & Hirst. Rebuilt plant destroyed by fire; equipped with 35 knitting machines for cotton half hose.

**TENNESSEE.**

Knoxville. Biddle Mfg. Co. Rebuilt bleaching plant; also put in additional knitting machinery.
Lenoir City. Dixie Mills. Making arrangements to build a cotton mill. Will install 6,000 mule spindles. Contracts to be placed prior to the new year.
Nashville. Nashville Hosiery Mills Co. Purchased Limestone Hosiery Co.'s plant (Athens, Ala.), and removed here. Now operate 122 automatic knitters, 136 rib machines, and 48 sewing machines on children's ribbed hosiery.

**VERMONT.**

Bennington. Bradford Knitting Mills. Installed new ribbed knitting machines.

**VIRGINIA.**

Lynchburg. Providence Hosiery Mill, O. Nestler & Sons, proprietors. Built new dye house and added a finishing plant to mill.
Roanoke. Roanoke Knitting Mill. Installed 40 additional machines in the plant.
Williamsburg. Williamsburg Knitting Mill Co. Built addition, 45 by 35 feet, and 60 by 19 feet, 2 stories. Installed 7 sets cards and 1,440 spindles for making yarns.

## SILK

**CONNECTICUT.**

New London. Brainerd & Armstrong Co. Built new addition, 170 feet long, 4 stories, brick.
South Manchester. Cheney Bros. New office building erected, 120 by 40 feet, 2 stories, brick. Combing department removed into old mill and space vacated utilized for folding department.
Watertown. Heminway & Bartlett Silk Co. New boiler house built. Installed 150 horsepower boiler and new engine. Building addition to plant, 75 by 72 feet.

**MARYLAND.**

Hagerstown. Hagerstown Silk Company. Building a new mill, 150 by 50 feet, four stories. Expect to have completed in January. Will install 50 looms.

**NEW JERSEY.**

Trenton. American Silk Manufacturing Co. Removed plant from Eden, Pa., to this place.

**PENNSYLVANIA.**

Bath. Bath Silk Mfg. Co. Increased capital to $25,000. Installed 20 more looms, making total of 70.
Berwick. Colonial Spinning Mills. Addition built to plant and additional machinery installed, doubling capacity.
Bradford. Henry Leon. Addition built to mill and 7,500 new spindles installed.
Danville. Hartman, F. Q. Installed 3,000 additional spindles.
Harrisburg. Harrisburg Silk Mill, Pelgram & Meyer.. Installed ten (10) new looms and changed others over for making fancy silks.
Littlestown. Littlestown Silk Co. Installed 6 new looms and other machinery.
Philadelphia. Kensington Silk Dye Works, 2185 E. Norris street. Purchased by Wm. Russell and Edgar K. Frank. Various changes made, including installation of filtration system.
Philadelphia. Killian Manufacturing Co. New building erected, 49 by 61 feet, one story and basement, Edgemont and Orthodox streets. Installed some new looms and use electricity.
Philadelphia. Pine Tree Silk Mills Co. Coral and Adams streets. Added number of automatic high speed ribbon looms and new box looms for broad silk department.
Philadelphia. Seidman & Sons Mfg. Co., 234 N. 2nd street. Added two new looms and new 15 horsepower gas engine.
Philadelphia. Westermann Mfg. Co. $5,000. 2632 Mascher street. Succeeds S. A. Westermann. Embroider hosiery.
Plymouth. Atwood, M. J. Added 1,500 new spindles, making a total of 11,500 in plant.
Pottstown. Champion Silk Mills. Added water softening plant to dyehouse, with capacity 100,000 gallons daily.
Scranton. Ashley, Wm. H. Added 2,000 more spindles in plant, giving total of 12,000.
Scranton. Paul Clemens Silk Mfg. Co. Built 30-foot addition, two stories, and installed 80 new looms.
Scranton. Renard, H. & Son, Taylor. Building new mill and will remove to same about August, 1905.

## MISCELLANEOUS

**MAINE.**

Newport. Weymouth Wool Pulling Co. New building, 35 by 40 feet, 2 stories and basement built for wool scouring.

**MASSACHUSETTS.**

Attleboro. Wolfenden, R. & Sons. Erected new building, 100 by 40 feet, 2 stories for increasing spooling, coning and stock rooms. Installed 50 horsepower engine.

**NEW HAMPSHIRE.**

Hooksett. Dundee Mills. Built bleachery.

**NEW YORK.**

Newburgh. Newburgh Bleachery. Extensive improvements in fire protection and installed a 4,000,000 gallon gravity filter.

**NORTH CAROLINA.**

Greensboro. Coulter & Lowry Co. Addition built, 50 by 154 feet, two stories. To remove Philadelphia plant here.

**PENNSYLVANIA.**

North Wales. Asbestos Fibre Spinning Co. New building erected, 100 by 40 feet, two stories and basement.
Philadelphia. Cox, Geo. S. & Bro. Cambria and Orme streets. Installed 45 new looms for making hair cloth.
Philadelphia. Fairmount Dye Works, 612-628 No. 24th street. Doubling capacity of bleachery.
Philadelphia. Hulton Dyeing & Finishing Co., 2712 Jasper street. Addition built to plant.
Philadelphia. Nicetown Dye Works. Erected new building on C. street, above Allegheny avenue, and removed to same. (Capacity 5,000 pounds a day.)
Philadelphia. John L. Waxler. Frankford. Rebuilt 3-story dry room damaged by fire.
Schuylkill Haven. Rowland, Samuel, Schuylkill Haven Bleach & Dye Works. Installed new spoolers and cone winding machinery.

**RHODE ISLAND.**

Bellefont. Whittle Dye Works. Plant destroyed by fire, being rebuilt. Main building 250 by 150 feet, with annex, 250 by 75 feet, for gray room and bleach room. New engine and dynamo for electric lighting to be installed.

## WHY TEXTILE GOODS SHOULD BE ADVERTISED.

This is the tenth of a series of papers upon textile advertising by Thomas Balmer, advertising manager of the three publications of the Butterick Publishing Company—The Delineator, The Designer and the New Idea.

1. Necessity and possibilities of textile advertising.
2. Naming and trade-marking textile goods.
3. Planning the advertising campaign.
4. General publicity and work upon dealers.
5. Actual experience of manufacturers whose advertising has been successful.
6. Brief comment upon six different lines which will then be discussed, one at a time, in the six following papers based upon actual statistics collected at an expense of thousands of dollars and an equal value for the time demanded for their collection.

Stockings are a great staple, and the manufacture of hosiery is a great industry.

Like so many of the industries of the textile world, hosiery is sold in great quantities unidentified in any way. Every dealer carries in stock the goods of a great many makers which are sold over the counter to the customer without any knowledge on the customer's part of the manufacturer's name

What has been proven to be true in the manufacture of underwear is even more emphatically true in the manufacture of hosiery.

The tremendous success of manufacturers who have advertised a given brand of hosiery is the most conclusive evidence of the possibilities of this particular textile if adequately advertised.

It is a very easy matter to brand a stocking with a trade mark. Everyone has seen the stockings marked simply and neatly with the trade mark of those manufacturers who are wise enough and far-seeing enough to consider the profitable investment in a trade mark as well as in a plant and a good product. The mark which washes out after a few times doesn't in any way disfigure the stockings, makes it very easy to identify them, and is the customer's guide to secure good goods and the same goods the second time. Only a small proportion of the stockings now being sold are branded or advertised, but that proportion means a big income for two or three manufacturers.

The quantity of hosiery sold in the country is something beyond calculation. There is a population in this country now of over seventy-five million people, and it is safe to say that with the exception of a very small fraction, all of them wear stockings or hose. Even with the utmost care in the way of darning, stockings wear out very fast, and the average supply of a given human being in the ordinary ranks of life would run to some dozen pairs or so a year. Few things are bought so constantly, are so easily worn out, are so frequently renewed and are so necessary a part of wearing apparel. Stockings are worn by men, women and children.

The difference between good ones and bad ones is great. This difference cannot be ascertained by examining the goods. The reputation of the manufacturer is the only guide which the customer has, or needs.

The hosiery manufacturer who appreciated his opportunity could very easily have a business more profitable and more important than that of the National Biscuit Company by the very simple process of manufacturing stockings either for women and children, or for men, women and children, of a very good quality, at a very fair price, with some special features, and by advertising them thoroughly and extensively.

There are hundreds of manufacturers who are making good hosiery—hosiery which has good talking arguments, hosiery the arguments about which would appeal to every intelligent man and woman. Most of these manufacturers send out their product blindly. They do not even know where it goes. They have no idea what retailers sell it, and, therefore, they leave the actual wearers of this hosiery to find out its good quality for themselves.

What is more, when a man or woman has worn these stockings successfully, has been satisfied with them and desires to get a similar pair, there is no way for him or her to identify them or secure them in any store.

The amount of wasted business in this utterly antiquated way of selling is beyond calculation. There is no reason why a man making a really good brand should not sell his stockings over and over again to the same people.

When an average man or woman finds any article of wearing apparel that he or she likes, the easiest way to be pleased is to buy the same thing again.

More people change the brand of stockings they buy because they do not know the

name of the last satisfactory pair than from any innate restlessness.

On the other hand, any man or woman buying stockings which are unsatisfactory can avoid getting this brand again by asking for an advertised brand with the quality of which he is familiar by advertising.

What I have just said is not mere assertion, but it is assertion backed up by the facts. I have carried on at great expense and in a large number of stores an investigation to show the exact state of things in the hosiery departments. These tables prove conclusively that very few people ask for stockings by name. They show that customers ask for advertised stockings, and that when a customer asks for an advertised brand of stockings, she usually gets it. This proves that customers made by advertising are sure of their ground.

The percentage of inquiries for advertised brands bears the same relation to the total demand for stockings that the amount of money spent in advertising stockings bears to the unadvertised possibilities. In other words, the success of manufacturers who advertise stockings is proof conclusive that the great majority of manufacturers do not grasp their opportunities.

The table marked "Summary" proves that when a customer asked for unspecified stockings it was harder to sell her than when she asked for a given brand; that in a great many cases more of an advertised brand were sold than were asked for, and that customers who departed without buying anything were those who asked for unspecified stockings. Also note that the unspecified stockings are considerably more than half of the total quantity.

This demand for unspecified stockings is the natural and legitimate field for some advertiser intelligent enough to grasp the stocking situation and solve it.

Note the reasons given by customers for asking for a given stocking. One reason is that the last purchase was satisfactory. This applies only to advertised brands. Undoubtedly a great many customers purchase satisfactory stockings, but cannot identify them, and therefore cannot ask for them a second time. Notice also that three per cent. asked for quality, that seven per cent. asked for fast color, that nine per cent. preferred durability, and that four per cent. liked the brand, which is practically the same as "last purchase satisfactory," although it might mean that they were convinced by the arguments of the advertisers. A number of other qualities menttioned are "soft finish," "tops suitable for garters," "keep in shape," "washable," "non-shrinking," "double soles."

All these are lines of arguments to be followed by the advertiser who wishes to appeal to the stocking-buying public.

You will also notice under the column "Why did you sell the brand that was sold?" that five per cent. of the stockings sold were the store's own brand. The manufacturer can rest assured that the store will push its own brand wherever possible, and that the only way to offset this is for the manufacturer to advertise his own brand so strongly that the arguments of the saleswoman will not prevail against the woman's convictions.

Notice also that only a very small percentage were influenced by price.

These tables should be studied by every manufacturer of hosiery. They are a guide to public opinion.

A separate investigation carried on through the columns of the Butterick Trio has revealed some further interesting statistics.

Black Cat hosiery is probably the most widely advertised hosiery, and it is represented in this column, "What brand or make do you use or buy?" by 477, with 251 for Onyx, 229 for York Knitting Mills, 149 for Hermsdorf, and 149 for Fay. These figures are in proportion to the amount of advertising done by the different houses and are away ahead of the combined demand for less known brands.

The column headed "Exchange," which means "to what brand would you change if you stopped wearing the brands you are using?" shows that in almost every case the change would be made to advertised brands, although you will notice that a very small percentage would change at all.

As a very large percentage of the people buying the higher grades of stockings are using advertised brands, it is safe to assume that the manufacturer who advertises makes a stocking worth advertising. It is hardly fair to assume that the manufacturer who doesn't advertise is not proud of his goods. Yet I believe that the time will come when this will be true, and that advertising will be one of the greatest evidences of merit.

THOMAS BALMER.

# STOCKINGS

| 1. WHAT SHE ASKED FOR? | No. of customers | 2. For what purpose: Did not say | Own wear | Young girl | Old lady | To wear with low shoes | To match shoes | To match dress | Bathing | Evening wear | Summer wear | General wear | Rheumatism | Special occasions | TOTAL | 3. Why did she ask for it? Did not say | Last purchase satisfactory | Thin and cool | Stylish | Quality | Fast colors | Large legs | Extra long legs | Durability | Wanted a special color | Liked the brand | Soft finish | Tops for garters | Legs keep shape | Do not adhere to body | Could not get elsewhere | Well-made seams | New design | Washable | Do not shrink | Last ones were not good | Economy | Double soles | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Silk Stockings | 9 | .. | 1 | 1 | .. | 1 | 2 | 1 | .. | 2 | .. | .. | 1 | .. | 9 | 3 | .. | 1 | .. | 1 | .. | .. | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 9 |
| Lisle " | 8 | 2 | 1 | 1 | .. | .. | 1 | .. | .. | 1 | .. | 1 | .. | 1 | 8 | 3 | .. | 3 | .. | .. | .. | .. | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 8 |
| Cotton " | 3 | .. | 1 | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | 3 | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | 3 |
| Wool " | 2 | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | 1 | .. | 2 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 |
| Lace " | 2 | 1 | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | 2 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | 2 | .. | .. | .. | .. | .. | .. | 2 |
| White soled stockings | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 |
| Bootleg Stockings | 1 | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 |
| Good " | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 |
| Openwork " | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | 1 | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 |
| Imp. Swiss " | 1 | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | 1 |
| Child's Socks | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 |
| Hermsdorf Stockings | 6 | .. | 5 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 6 | 2 | 2 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | 6 |
| Gordon " | 3 | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | 3 | .. | 1 | .. | .. | .. | .. | 1 | 1 | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 3 |
| Gordon Lisle " | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 |
| Onyx " | 3 | 1 | 2 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 3 | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | 2 | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | 1 | .. | 3 |
| Unspecified " | 57 | 22 | 14 | 2 | 1 | 4 | 3 | 4 | 2 | .. | 4 | 1 | .. | .. | 57 | 24 | 5 | 3 | 1 | 1 | 6 | 2 | 1 | 5 | 1 | .. | 3 | 2 | .. | .. | 1 | .. | .. | 2 | 1 | 1 | .. | 1 | 57 |
| TOTAL | 100 | 27 | 26 | 7 | 2 | 7 | 7 | 5 | 3 | 3 | 4 | 6 | 1 | 2 | 100 | 33 | 8 | 9 | 1 | 3 | 7 | 3 | 1 | 9 | 2 | 4 | 5 | 3 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 100 |

| 1. WHAT SHE ASKED FOR? (Continued) | No. of customers | 4. What did you sell her? Own make | Same as she asked for | Lisle | Hermsdorf | Gordon | Onyx | Thin cotton | Silk | Silk imported | Nothing | TOTAL | 5. For detailed analysis see next page | 6. Why did you not sell? Did not say | Too expensive | Color did not suit | Legs were too short | Tops were too light | Too thick | Design did not suit | Not in stock | Could not suit customer | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Silk stockings | 9 | 1 | .. | .. | .. | .. | .. | .. | .. | 4 | 4 | 9 | | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | 4 |
| Lisle " | 8 | 2 | .. | .. | .. | 1 | .. | 1 | .. | .. | 3 | 8 | | 1 | .. | 1 | .. | .. | .. | .. | .. | 1 | 3 |
| Cotton " | 3 | 2 | 1 | .. | 1 | .. | .. | .. | .. | .. | .. | 3 | | | | | | | | | | | |
| Wool " | 2 | 1 | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | 2 | | | | | | | | | | | |
| Lace " | 2 | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | 2 | | | | | | | | | | | |
| White soled Stockings | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | | | | | | | | | | | |
| Bootleg " | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | | | | | | | | | | | |
| Good " | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | | | | | | | | | | 1 | 1 |
| Openwork " | 1 | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | 1 | | | | | | | | | | | |
| Imported Swiss " | 1 | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | 1 | | | | | | | | | | | |
| Child's Socks | 1 | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | 1 | | | | | | | | | | | |
| Hermsdorf Stockings | 6 | .. | 6 | .. | .. | .. | .. | .. | .. | .. | .. | 6 | | | | | | | | | | | |
| Gordon " | 3 | .. | 3 | .. | .. | .. | .. | .. | .. | .. | .. | 3 | | | | | | | | | | | |
| Gordon Lisle " | 1 | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | 1 | | | | | | | | | | | |
| Onyx " | 3 | .. | 3 | .. | .. | .. | .. | .. | .. | .. | .. | 3 | | | | | | | | | | | |
| Unspecified " | 57 | 27 | .. | .. | .. | 2 | 7 | .. | 1 | 1 | 14 | 57 | | 1 | 3 | 2 | 1 | 1 | 1 | .. | 1 | 2 | 3 | 14 |
| TOTAL | 100 | 35 | 16 | 1 | 2 | 4 | 7 | 1 | 1 | 5 | 22 | 100 | | 2 | 4 | 4 | 1 | 1 | 1 | 1 | 3 | 5 | 22 |

# STOCKINGS (Continued)

| 4. WHAT DID YOU SELL HER? (*Repeated, see foregoing page*) | | 5. *Why did you sell it?* | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Best | Wanted them | Correct weight | Liked them | Always sell own make first | Wear well | Extra heavy | Thin and cool | Matched | Liked tops | Color suited | Most people prefer them | Right size legs | Fast colors | Had proven satisfactory | Comfort | Price suited | Had nothing else | Do not shrink | Pattern suited | | Total | TOTAL |
| Own Make | Silk | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | |
| | Lisle | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | |
| | Cotton | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | 2 | |
| | Wool | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 35 |
| | White soled | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | |
| | Good | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | |
| | Unspecified | ... | ... | 1 | 4 | 5 | 10 | ... | ... | 1 | ... | 1 | ... | ... | 2 | 1 | 1 | 1 | ... | ... | ... | ... | 27 | |
| Same as She Asked For | Lisle | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | |
| | Lace | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | |
| | Imported Swiss | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | |
| | Hermsdorf | ... | 6 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 6 | 61 |
| | Gordon | ... | 3 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | |
| | " lisle | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | |
| | Onyx | ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | |
| Lisle | | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | 1 |
| Hermsdorf | Cotton | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | |
| | Wool | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 8 |
| | Child's Socks | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | 1 | |
| | Unspecified | 1 | ... | ... | 1 | ... | ... | 1 | ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | 5 | |
| Gordon | Lisle | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | |
| | Openwork | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 4 |
| | Unspecified | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 2 | |
| Onyx | Unspecified | ... | ... | ... | ... | ... | 6 | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 7 |
| Thin cotton | | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| Silk | | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| Silk, imported | | 1 | ... | ... | ... | ... | 1 | ... | ... | 1 | ... | 1 | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | 5 |
| Nothing | | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 22 | ... | 22 |
| Total | | 2 | 14 | 2 | 8 | 5 | 22 | 1 | 2 | 2 | 1 | 3 | 3 | 2 | 4 | 2 | 1 | 1 | 1 | 1 | 1 | 22 | ... | 100 |

## SUMMARY

| MATERIAL | Silk | Lisle | Cotton | Wool | White Soled | Good | Lace | Openwork | Hermsdorf | Gordon | Onyx | Unspecified | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sold when asked for | 5 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 6 | 4 | 3 | 27 | 55 |
| Sold when not asked for | 2 | 1 | 1 | .... | .... | .... | .... | .... | 8 | 4 | 7 | .... | 23 |
| Total | 7 | 4 | 3 | 1 | 1 | 1 | 1 | 1 | 14 | 8 | 10 | 27 | 78 |

| | |
|---|---|
| Number of customers who bought | 78 |
| Number of customers who did not buy | 22 |
| Total number of customers | 100 |

# SEPARATE SPECIAL INVESTIGATION

# Women's Hosiery

| What Brand or Make do you use or buy? | No. of Purchasers | Advertise | Rep. and Rec. | Good | Preferred | Durable | Fast Color | Quality | Best |
|---|---|---|---|---|---|---|---|---|---|
| Amazon Knit Co. | 2 | | 1 | | | | | | |
| Black Cat. | 477 | 39 | 7 | 34 | 1 | 5 | 20 | 3 | 34 |
| Burlington. | 30 | 1 | 1 | | | | 1 | | 3 |
| Burson. | 65 | 2 | 3 | | | | | | 2 |
| Cashmere. | 16 | | | | | | | | 3 |
| Cotton. | 27 | | 1 | | | | | | 1 |
| Des Moines Hosiery Mills. | 4 | | | | | | | | |
| Davis | 1 | | | | | | | | |
| Eiffel Black. | 20 | 1 | 1 | 1 | | | | | |
| Fast Black. | 53 | 3 | | | | | | | |
| Fay. | 149 | 13 | 2 | 13 | 1 | 5 | 1 | | 9 |
| Granite Dye. | 15 | | 1 | 2 | | | 1 | | |
| Gordon Dye | 36 | 3 | 2 | | | 1 | | | 1 |
| Hahns. | 1 | | | | | | | | |
| Hermsdorf. | 149 | | | | | | | | |
| Hayne Knit. | 4 | 2 | | | | | | | 1 |
| Lisle | 105 | 3 | 1 | 6 | 1 | 1 | | | 2 |
| Matchless. | 2 | | | | | | | | |
| Maco | 9 | | | 1 | | | | | |
| Onyx. | 251 | 16 | 1 | 10 | | 9 | 8 | 1 | 16 |
| Racine | 51 | 4 | 1 | 1 | | 2 | | | 1 |
| Shawknit | 28 | 4 | 1 | 1 | | 2 | | | 1 |
| Silk. | 17 | | | | | 1 | | | 1 |
| Samson. | 14 | | | 1 | | | | | |
| Topsey. | 139 | 14 | 5 | 19 | 1 | 1 | 8 | | 18 |
| Winona Mills. | 36 | | 1 | 7 | 1 | | | | 1 |
| White Foot | 6 | | | | | | | | |
| York Knit. Mills 4-Thread. | 229 | 19 | | | | | | | |
| All kinds. | 54 | | | 1 | | | | | |
| Not Specified | 206 | | | | | | | | |
| Miscellaneous. | 305 | 10 | 6 | 15 | 2 | 4 | | 3 | 10 |
| | 2501 | | | | | | | | |

| EXCHANGE | |
|---|---|
| Topsey to Black Cat | 2 |
| " " Onyx | 2 |
| " " Y. K. M. | 2 |
| " " Miscellaneous | 1 |
| Black Cat to Y. K. M. | 2 |
| " " " Onyx | 4 |
| " " " Topsey | 3 |
| " " " Burson | 1 |
| " " " Miscellaneous | 1 |
| Burson " Topsey | 1 |
| " " Onyx | 2 |
| Fast Color to Y. K. M. | 2 |
| " " " Onyx | 2 |
| " " " Granite | 1 |
| Fay to Onyx | 5 |
| " " Y. K. M. | 2 |
| " " Miscellaneous | 1 |
| Granite to Black Cat | 1 |
| Hermsdorf to Black Cat | 1 |
| Lisle to Burson | 1 |
| " " Y. K. M. | 1 |
| " " Fay | 1 |
| " " Onyx | 1 |
| Onyx " Black Cat | 1 |
| " " Gordon | 1 |
| " " Racine | 1 |
| Racine to Onyx | 1 |
| " " Y. K. M. | 1 |
| Y. K. M. to Cotton | 1 |
| " " Fay | 1 |
| " " Onyx | 1 |
| Miscellaneous to Black Cat | 3 |
| " " Topsey | 1 |
| " " Y. K. M. | 5 |
| " " Fay | 6 |
| " " Racine | 2 |
| " " Miscellaneous | 3 |

# TEXTILE PROCESSES.

EDITED BY E. A. POSSELT.

## THE MANUFACTURE OF SILK FROM FIBRE TO FABRIC.

V.

### WEIGHTING OF SILK.

The boiling off process, to which raw silk fibre is subjected while cleaning and removing the glue or sericin, causes a loss in weight of from 15 to 30 per cent., according to the degree of boiling off given to the silk. For quite a while this loss was regarded by the silk manufacturer as unavoidable, but preference was soon given to dyers who could return a weight of dyed silk equal to the raw silk supplied, thus it became, especially in the black silk trade, the custom to bring the silk up to the same weight, or in many cases even more than the original weight. To do this, recourse was had to the fact that salts or compounds of iron and tin, when brought into contact with the silk fibre, are more or less decomposed, and oxides of those metals are deposited on the silk, giving in turn, by repeated treatments, a considerable degree of artificial weighting to the silk under operation.

When dyeing black silk by the use of nitrate of iron in combination with tannin matters like catechu, galls, logwood, etc., this weighting is easily and readily effected by alternate treatments with the iron salt and tannin matters, and by the addition of tin salt, it is possible to increase the weight of the silk to three times its original weight.

As iron tends to darken silk, it cannot be used for weighting the latter when the same is to be dyed in colors, so that recourse is had to perchloride of tin, which weights silk in a satisfactory manner, and at the same time permits the dyeing of such tin-weighted silks in any color desired. Tin perchloride comes in the market in two forms, either as a strong and corrosive liquid, or in the form of white solid lumps of a hygroscopic nature.

It can be made by the dyer himself, in the following manner: 1 lb. of tin crystals is dissolved in 1 lb. of hydrochloric acid. Next add 3 oz. chlorate of potash in small quantities at a time, since there is a considerable amount of chemical action going on, and some degree of caution must be exercised in mixing the ingredients. Stoneware jars are the best to use in carrying on the work. Whether bought ready made or prepared as described, the tin chloride liquor is diluted to the strength of 50 deg. Tw. Do not make the solution stronger, since tin chloride liquors of over 60 deg. Tw. tend to act upon and disintegrate the silk fibre.

The silk is well immersed in this liquor and left for about two hours, after which it is taken out, and the surplus liquor run out and allowed to run back into the jars, since the said liquor can be used again and again, by replenishing the solution with new, strong liquor from time to time, in order to keep the same up to its required degree of strength. After the silk has been wrung, it is well washed in water, then passed through a bath of 4 oz. per gallon of soda. These two operations, of immersing the silk in tin chloride liquor and in turn washing the said silk thus treated, are repeated as often as is necessary to bring the silk up to the desired weighting.

After being thus weighted the silk is ready for dyeing.

By alternating baths of tannic acid with the tin it is possible to add considerably to the weighting power of the tin baths.

This weighting does not add anything to the color of the silk, so that, as mentioned before, silk thus treated can be dyed in the most delicate colors, as for example, light shades of blue, red, yellow, green, etc., etc.

### ARTIFICIAL SILK

is made by treating cotton or other cellulose material with a mixture of nitric and sulphuric acid at a low temperature, which converts it

into nitrocellulose, which is then dissolved in a mixture of acetone, acetic acid and amyl alcohol, equal volumes of each of the three components giving the best results. This substance is expressed from capillary orifices, and instantly solidifies on contact with the atmosphere, by reason of the evaporation of the acetone, and forms solid, silky, lustrous threads, which in turn are reeled, doubling two or three ends. Artificial silk in this state is an inflammable and explosive product, due to the presence of the nitrocellulose, and this has to be remedied to render it safe for use. For this purpose suitable reducing agents, such as hydro-sulphurous acid, ammonium sulphydrates, etc., are employed in order to reduce the nitrocellulose, to totally or partially denitrated cellulose, according to the length of the reaction. The hanks of threads are immersed in the solution for several hours, then washed in pure water and suitably dried. Two or three of these threads are then united into one thread, and reeled. The coloring of the threads is done when preparing the mixture for making the thread.

Artificial silk bears a very deceptive resemblance to natural silk, and has very nearly the same lustre. It is of higher specific gravity, but lacks the great tensile strength and elasticity of the latter, and has the drawback of being unable to stand immersion in warm baths.

Artificial silk has not met with that success that was predicted for it, but it has found some uses in the manufacture of braids, etc.

TESTS FOR DETECTING ARTIFICIAL SILK.

In view of the considerably lower value of the artificial silks, it becomes important that means of identifying these should be had. The most suitable indications are the chemical and physical characteristics, the inferior strength and elasticity of artificial silks, and their deficiency in the "crackling" feeling, being properties made use of in distinguishing from true silk. The specific gravity of artificial silk is 1.49 while that of true silk ranges between 1.357 and 1.367. Chemical tests are used to a great extent, owing to positive results.

As collodion silks always contain some nitro-compound, they give a blue color with diphenylamine and sulphuric acid, while natural silk is uncolored.

In water, all kinds of artificial silks expand, and alcohol or glycerine will cause them to contract again.

In strong sulphuric acid, collodion silk swells rapidly and dissolves; cellulose silk gradually becomes thinner and dissolves; gelatine silk only dissolves on heating strongly.

Cold concentrated hydrochloric acid has little action on the silks, but on warming it rapidly dissolves gelatine silk.

Acetic acid causes a slight swelling, and gelatine silk dissolves almost entirely if boiled in it.

Chromic acid (a half saturated solution) dissolves all artificial silks in the cold; real silk dissolves more slowly.

Caustic potash (40 per cent.) dissolves gelatine silk rapidly; collodion and cellulose silks swell, but do not dissolve even on boiling, the liquid, however, becoming yellow. Natural silk is dissolved on boiling, but the liquid remains colorless.

Ammoniacal copper oxide causes collodion silk to swell quickly and then dissolve; cellulose silk swells less rapidly; gelatine silk is insoluble, but stains the liquid a bright violet.

Alkaline copper glycerine solution dissolves natural silk immediately when heated to 80 degrees; tussah and gelatine silks dissolve when boiled for one minute; the other artificial silks are untouched.

Solutions of potassium iodine color artificial silks an intense red or reddish brown, the color vanishing on washing with water, leaving collodion silks a transient greyish blue. Cellulose silk does not exhibit this blue.

Iodine and sulphuric acid stains natural silk yellow, a gelatine silk yellowish to reddish brown, collodion silks deep blue (violet shade), and cellulose silk pure blue.

Solutions of zinc chloride and iodine, color collodion silk bluish violet, cellulose silk greyish blue to greyish violet, while gelatine silk and natural silk become yellow and disintegrate. In burning, gelatine silk resembles natural silk; the other artificial silks suggest cotton.

TO TEST THE QUALITY OF SILK,

as used in the construction of a fabric, tear the latter both lengthwise and crosswise. If it gives way readily in either direction, it indicates that either the dye has destroyed the strength, or the threads are composed of silk waste.

Pure silk, properly dyed, is the strongest of fibres.

Nearly all the cheaper dyes, particularly the dark and black ones, have a basis of metallic salts that weaken the fibres.

Ravel out the fabric, and examine carefully the quality of the warp and filling. Sometimes a pure silk warp is woven in connection with a neavily loaded filling, at others, the filling, which comes on the face, is of pure silk, while the remainder is of inferior silk.

The pure silk, unloaded, is of a brilliant lustre and soft to the touch. If the lustre has been artificially produced, the fibre is harsh and brittle. If it is silk, but loaded with metallic dye, the fibre looks like cotton, but is somewhat softer.

Another test of quality is to pull out threads, both warp and filling ways, and try their strength. Catch them with both hands about an inch apart, give a quick outward jerk, and note the force necessary to break them. Then try to tear the silk along the lines that the threads come out of. If it parts so obstinately that there are puckers along the tear, it is proof that it will wear well.

A test for detecting either weighting or adulteration of fibre is by burning it. If it is pure and properly dyed, it will take fire with difficulty. It will go out as soon as the flame is withdrawn, leaving a charred mass that is nearly jet black. Weighted silk takes fire readily, and once burning, will smoulder through the piece, leaving ashes that keep the shape of the cloth, and are of a light yellowish-red color.

The requisites of a thoroughly good silk are strength, smoothness, lustre and richness, without weight, no matter how thick the texture. Adulteration invariably causes a harsh feeling. In heavy weaves, such as brocade, it is particularly important to see that the foundation is of sound, firm silk, as otherwise the fabric will not repay the cost of making.

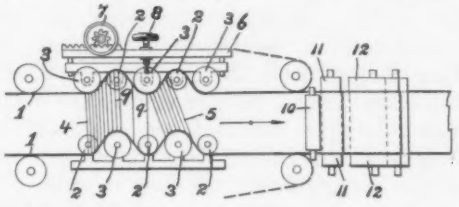
For drapery and upholstery, one seldom wants to buy pure silk; a well made mixed silk and woolen fabric will not only usually last longer than pure silk when applied to furniture, but it will hang better when used for curtains or portieres.

Artificial silk burns up quickly, almost like paper, and gives off a smell similar to burnt cotton.

## A NOVEL TENTERING AND DRYING MACHINE FOR SILK FABRICS.

In this machine the tentering is obtained by drawing the fabric forward by parallel chains, undulated or guided in a curved path in a horizontal plane, thus making a kind of zig-zag travel for the fabric through the machine.

The construction and operation of the machine is best shown by means of the accom-




panying illustration, which is a plan view of the machine, also showing the passage of the fabric through the machine and the positions occupied by the filling threads in the fabric at different points of the travel.

Referring to the illustration, the tentering apparatus consists of two parallel chains, on which the two edges, 1, of the fabric are fixed by nippers. These chains are guided by rollers 2 and 3, as shown, thus making the curved path of travel, previously mentioned, but at the same time said chains continue to be parallel with each other throughout the travel. In this way, the filling threads, 4, preserve the same length in the straight part of their travel, and also in the curved part when said threads remain perpendicular to the edges of the fabric, which condition, however, cannot always be had, since certain fabrics are presented to tentering machines with very irreg-

ular filling, and if the filling is presented obliquely, as at 5, in the curved part of the travel it might undergo lengthening or stretching sufficiently to cause breakage. To prevent this, the set of pulleys, 2, on one side of the machine are made movable in the longitudinal direction, so as to reduce the tension on the fabric when necessary, for this purpose the slide, 6, carrying the pulleys being moved in either direction by means of a hand wheel, 7. The necessary tension of the filling threads, which permits of obtaining the best tentering results, without risk of tearing the fabric, requires that the tension of said filling threads be varied at each instant, whereas for the final width of the fabric, obtained during drying, the same should generally be constant. To obtain the first condition, the set of pulleys, 2 and 3, on one side are made movable transversely from the fabric by means of a screw, 8, which is operated at the proper moment by the same operator who controls the longitudinal motion of the pulleys.

While the fabric is traversing the curved path, which produces the tentering, the cloth is most liable to be torn when the warp and filling threads form the greatest angle with each other. These risks of tearing are diminished by slightly reducing the tension of the filling threads at the moment when they make the greatest angle with the warp threads.

This is accomplished by having a slight difference in the diameters of the pulleys of the two sets, the large pulleys, 3, being situated at the outside of the selvages, 1, of the fabric. With this arrangement, where the filling is inclined on the warp, as at 4, said filling is a little shorter than when it is perpendicular to the warp, as at 9.

During the tentering process, the central part of the fabric follows the same path of travel as the selvages, due to the pull on the filling threads. This pull is greater in proportion as the fabric itself is stretched in the direction of its length. In order to reduce this increase of tension of the filling threads as much as possible, which otherwise might be injurious during the tentering, it is necessary to reduce the tension of the fabric in the direction of its length during the process, consistent with proper work.

On the other hand, during drying, the fabric generally requires to be stretched in every direction, and in order to have it sufficiently stretched lengthwise, rollers 10, 11, are placed in front of the drying drum, 12, for this purpose.

## PRACTICAL POINTS ON STRETCHING, ROLLING AND GIGGING, WITH A DESCRIPTION OF THE CONSTRUCTION AND OPERATION OF THE MACHINERY USED.

(Continued from November.)

With reference to the next question, that of the tension of the goods, we come to a matter which requires the most careful attention and manipulation of the operator. It has always been one of the greatest and most important points to builders of gigs to construct a machine by means of which it is possible to regulate properly the tension of the cloth as it is stretched before the cylinder of the gig, in order to allow the machine to do its most effective work and yet bring about the best results in the cloth. The difficulty, however, is one natural to the process, the trouble resting not so much with the machine as it is with the goods. If every piece of goods that has to be gigged came to the machine in exactly the same condition as regards weight, stock and construction, then the matter of tension would be very simple indeed. However, this is not the case, since fabrics vary so much in weight that an equal tension on two different pieces which differ slightly in weight per yard would result in a perceptible alteration in the appearance of the face of the goods, and which difference would only be heightened during the successively following procedures at finishing. Again, differently constructed fabrics take in turn differently to gigging, and when the latter process must be always more or less regulated to suit the kind of cloth under operation. If for example the pieces of cloth under operation are made with a different number of picks to the inch, then the same amount of tension given to the fabric cannot possibly bring about similar results. Thus it will be advisable for the operator to know enough about the conditions of the goods to

be gigged, in order to be able to regulate the tension so as to produce as nearly as possible uniform results to fabrics under operation. This, however, is no easy task and can only be accomplished after considerable experience and skill on the part of the operator. This difference in tension as required for different fabrics, may not amount to very much where the goods are heavy and do not require a great amount of work; but if the goods happen to be light and the gigging correspondingly light, the difference in tension required is then quite an item.

As regards the third point, the condition of the cloth in the process, there are two different questions that arise. These are the differences between wet and dry gigging.

Where the cloth is gigged damp or wet, the fibres will naturally tend to lie down close to the body of the fabric, and when the piece gets to the shear, the revolver blades pass over them and leave them much as the gig left them, at least so far as the bottom is concerned. The cause of this is found in the nature of the wet fibre, and more readily retains its position when damp. The teasel serves to comb and lay the nap in a certain way, and when the shear gets at it, it is with difficulty that it touches it at all. In cropping, a wire raising brush, runs a little faster than the goods, raises the nap perfectly.

The wetting of the goods is accomplished by means of an ordinary sprinkling can, or by a series of perforated pipes, so arranged as to eject a stream of water at the proper time and place. It is in this way that such goods as doeskins, broadcloths and beavers, some kinds of worsteds, etc., are treated, and it is the distinguishing feature of many of the finest finishes in the market.

By the other method of gigging dry, a different kind of finish entirely is produced. The fibres being dry do not retain the position which they are given by the action of the teasel, but have a tendency to stand up in their natural position, the teasel points get down further into the body of the goods, and thus work up a fuller and richer nap, and leave it in such a condition that the blades of the shear can readily reach most all the fibres. None of the fibres are lying down close to the weave of the goods, and there are none of them but what can be brought up into contact with the shears by the use of a hard brush which every shear contains. The character which this treatment gives to the finish may be described as a close, threadbare or clear face finish, the nap as raised by the gig being in turn cut off by the shear. Clear face goods, many classes of dress goods, and worsteds and fancy cassimeres, are as a rule finished by means of dry gigging.

In both cases, whether wet or dry gigging, care must be taken not to push the cloth too forcibly on to the teasels, or a tender fabric will be the result. The teasels should be started slowly and gradually and with the oldest and softest teasels first, then the sharper may be used as the work progresses. Again there is a certain limit for gigging, to go beyond which is harmful to the strength of the fabric thus treated. To give, therefore, to all pieces of certain style of fabric the same kind of treatment will in a great many instances result in failure, for although some of the pieces will finish perfect, others will be spoiled. Therefore, in order to perform gigging intelligently, it is necessary for the finisher to study the construction of the goods carefully, he must see what kind and amount of gigging each individual piece may need or is able to stand.

### THE UP AND DOWN SINGLE CONTACT GIG.

With reference to the style of gigs used, this gig, as the oldest and most simple gig, will be best mentioned first. The same consists of a framework which supports a large cylinder from 36 to 40 inches in diameter upon which the slats containing the teasels are placed and by one or the other contrivance held in place. Above and below this cylinder are found the cloth receiving rolls and a little way above the bottom roll and also below the top roll there are brackets supporting smaller guide rolls, the upper one being movable so that it can be slid in or out at will. Before the cloth is put on the machine, the slats in the cylinder are examined as to the sharpness of the teasels, remembering that all gigging must be started with dull teasels, since the fibres on the surface of the

fabric are all more or less heavily felted or matted down to the body of the cloth, and when if teasels with sharp points were used, they would take hold too hard and the fibres would be torn out, both to the injury of the cloth as well as the teasels. After the proper teasels, i. e., "work" has been put on the cylinder, the fabric is put on with the head or number end on top, that is, the end from which the nap is intended to run.

The top as well as the bottom cloth rolls, previously referred to, are provided with aprons of a length sufficient to go once around the roll and then reach to the other. Each apron is fastened to hooks on the roll, the other end being either wired or sewed to the respective end of the cloth, i. e., one apron to the head end of the fabric, the other apron to the other end of the fabric.

After threading the fabric to the apron of the top roll, the guide roll, previously mentioned, as below the top roll is then run out its full length and the cloth run on the top roll, starting the machine, by moving the shipper handle to the right as far as it will go.

This shipping mechanism is such that when the top roll is engaged by turning the handle to the right, the bottom roll is released and will turn as the top roll pulls the cloth upward. If again, the handle is turned to the left, the top roll is released and the bottom roll engaged, whereas when the handle is pushed in the centre, both rolls are released and therefore stand still, the cylinder alone keeping rotating.

As soon as the cloth is very nearly wound on the top roll, the shipper lever is placed in its centre notch, which stops the rotation of the two cloth rolls, and when the apron of the bottom roll is sewed or wired to the other end of the cloth in the same manner as done with the head end of the fabric, taking care to have the apron run outside of the bottom guide roll. The shipper handle of the machine is then turned to the left, which sets the bottom roll in motion and in turn winds the cloth, as coming from the top roll, on it.

Each of the cloth rolls are provided with a brake by which the tension of the cloth is controlled.

The brake is now applied to the top roll until the required tension is reached and the top guide roll is run in until the cloth is brought lightly into contact with the teasels on the cylinder. When the cloth is run on the bottom roll and the apron has reached as far as the bottom guide roll in its downward course, the shipper lever is then turned to the extreme right and the cloth begins to travel upward. The brake, i. e., tension on the top roll is now released and applied to the bottom roll, and as soon as the apron is past the cylinder, the upper guide roll is turned somewhat inward so as to bring the cloth somewhat more, i. e., harder in contact with the teasels.

When the end of the cloth has passed the upper guide roll, what is termed as one "run" of the fabric has been completed and by this unit of work the amount of gigging done is expressed, by what we mean that for example "four runs" means that the cloth in question has passed over the cylinder eight times, i. e., has passed from top to bottom roll four times.

Now upon examination of the slats it will be found that the teasels have gathered and retained any amount of fibres, as combed from the cloth and known as "gig flocks," in fact enough to make it impossible for the teasels to do any more work, and, therefore, the slats, i. e., the teasels must be cleaned from these gig flocks. Various methods are employed for doing this work. In some mills they are cleaned by means of hand cards, whereas in other mills the slats are turned on the cylinder, thus presenting a fresh side of the teasels for gigging, and then when both sides of the slats have become filled with flocks, they are taken out of the cylinder and brushed, i. e., cleaned on a special machine (revolving brush) provided for this purpose. Next the fabric is turned bottom end up, and the truck turned. What was before the last end, but is now first, is then sewed or wired to the top apron and the goods run on the top roll; the bottom apron is then put in and the process of gigging as explained before repeated, this procedure being known as "reversing."

Up to this point most all the goods are treated practically alike, but now we face the

question of the finish for the fabric required, regulating the further process of gigging; the process until now explained having been more particularly only quoted in order to be able to explain the general construction and operation of the most simple built gig, but which, at the same time, holds good in its principle for any make of modern gigs, the construction of which will be later on treated.

A feature of the greatest importance in connection with gigging is the grading of the slats into sets of different and increasing degrees of sharpness in order to be able to give fabrics of one style practically the same amount of gigging, and not have some of them treated one way and the others another way. To do this properly, the number of slats required to fill the cylinder must be taken into account and this number divided into sets with equal numbers; and have that many degrees of sharpness of teasels, however, when dealing with face finished fabrics, it will be advisable to have more degrees of sharpness to slats than could be well made by dividing the slats of one cylinder into sets, in this case, for example, grading the slats in sets of six each and make from eight to ten grades of teasels. This grading of the teasels is made necessary for the reason that all gigging must be started with dull teasels, and the sharpness of the teasels used increased as the progress of gigging demands. If we would start with all, or even too much, new work, i. e., slats of new teasels, known as "breakers," both the fabric as well as the teasels would suffer, for, being stiff and sharp, the points of the teasels would, as soon as they come in contact with the cloth, get caught in the felt and tear out the fibres, thus destroying the strength as well as the finish of the cloth under operation, and at the same time the teasel points would become so mutilated the slat would be of very little use thereafter.

Always remember that during gigging, to closely examine how well the felt is raised, as well as the strength of the cloth, so that no tender fabric will result. The slats must also be carefully watched, in order that the several grades are kept at a uniform sharpness, as well as to use up the slats, i. e., teasels in the frame, completely. It certainly will be understood, that slats, i. e., teasels as used correspondingly change in their grade, i. e., gigging properties.

When testing the fabric under operation for its strength, take both of your hands and pass the cloth between the forefinger and thumb of each hand, having the thumb on top, and bring the hands close enough together to have the finger ends touch each other, then hold the cloth tight between the fingers and bring the knuckles of the thumb together, being careful that the cloth will not slip between the fingers. In this way you will readily ascertain the strength of the cloth under operation. It is a well known fact that by means of this procedure, by some practice you are able to burst the strongest fabric. However, it is not at all necessary for you to do this, simply strain the fabric gradually and you can easily note when there is a tendency for the goods to part. Always test the fabric near the end, in order that if a hole is burst in the cloth, the damage thus done will be a minimum expense to the mill.

In order to ascertain the amount of gigging given a fabric, insert one of the small blades of a penknife under the nap and lift and lay back the fibres, in this manner exposing the ground. You can easily tell if all the fibres are raised or if some of them still cling to the body of the structure.

Never take a fabric from the gig until thus tested with reference to its strength, and more particularly yet, regarding nap sufficiently raised, and there will be no trouble at the shear and goods will not have to be sent back to be regigged.

Besides the single contact gig previously explained, there are several makes of other gigs in the market, viz: the up and down two contact gig, the rotary gig, and the two cylinder gig, everyone having their special points of advantage in their construction, their chief aim being increases in production, without increase in labor.

THE UP AND DOWN TWO CONTACT GIG

will do much more work per day and per man than the common up and down single contact machine previously explained, the increased output being effected by a cylinder of in-

creased diameter (42 inches) with two applications of the cloth to it. Two large adjustable contacts or breasts, in this machine, are the means for about doubling the amount of gigging as compared to the single contact gig. These two applications have a quick acting geared adjustment from two of the heaviest possible contacts, to a distance of four or five inches entirely free from the cylinder, which feature enables the operator to conveniently run on new pieces, sew the seams and apply temples or stretcher sticks.

The path of the cloth is free from sharp turns and any number of temples will run nicely on it. Reversing and stopping the cloth is governed by one lever, independent of other motions. The friction to the cloth rolls are handy, efficient, and capable of the heaviest or lightest tensions. There are twenty-four iron flats to the cylinder used in connection with this gig, and which are staggered or set alternately to the right and left by pairs so the cross irons will not rotate in the same line.

Special attachments as may be used in connection with this gig are a rolling attachment located in front of the machine, which rolls the cloth onto a removable wood roll from the lower draft roll. It is operated by a clutch, and will make a hard, even roll. A cylinder vibrator, for a two-inch stroke, is another one of these attachments, and which by means of vibrating the cylinder during gigging will greatly assist the teasels in raising a most uniform even nap all over the surface of the fabric. A sprinkler pipe is placed just beneath the lower cloth application, and which applies water directly to the face of the fabric under operation. Two stretch rolls, one for each contact, are also sometimes met with in this construction of a gig. If required, a one-contact attachment, by which the cloth is brought only in one long application to the cylinder, is furnished, and when the machine then can be used either as a single contact or two-contact machine as preferred for certain fabrics made by the mill.

### THE ROTARY GIG.

In this make of a gig the cloth after once put on, the ends are nicely sewn together, either by machine or hand, in such a way that the seam ends are on the back, presenting a smooth face to the cylinder, the fabric thus being made into an endless piece and handled in this manner, the cloth running continuously over the cylinder and through the scray as placed beneath the machine, until sufficiently gigged. The machine has a cylinder, the same as the other, revolving at from 150 to 175 r. p. m., but the cloth, instead of rolling up on drums on top and bottom and getting only one or two contacts in its passage over one side of the cylinder, passes now around the cylinder and has either one or two contacts on each side of the cylinder, a machine in the latter case being known as a quadruple acting gig. Once the cloth has been started in a rotary gig, the seam only has to be watched in order to tell how many runs the piece has had. The degree of application of cloth to the cylinder in these machines is regulated by a hand wheel, conveniently located on the machine, said hand wheel operating the contact rolls of the gig. The rotation of the cylinder is reversible, the same being done by means of a cross belt provided to this machine besides the straight belt (the machine having three pulleys, viz: two loose pulleys—one for each driving belt —and one driving pulley, situated between the two loose pulleys). The cross belt turns the cylinder in the opposite direction and of course the cloth is also run in the other direction by means of a lever operating a set of gears which reverse the travel of the cloth. The guide rolls, one at each side of the machine and one at the top, in this gig are transformed into expansion or stretch rolls, in order to keep the surface of the cloth free from wrinkles.

There is a special rotary teasel cleaner beneath the cylinder, consisting of a rotary wire brush which can be lifted up in contact with the points of the teasels by means of a conveniently located hand wheel. The peripheral speed of this wire brush is in the same direction but much faster than that of the cylinder, and consequently frees the teasels from flocks during the operation of actual gigging the cloth, and without stopping or reversing the cylinders. This effects a very great saving of time over the old method of cleaning with hand cards or taking out the

teasels slats and applying them by hand to a separate rotary brush cylinder cleaning machine.

THE TWO CYLINDER SIX CONTACT GIG.

The same is the standard machine with reference to quality and quantity of work done, and is characterized by its smooth and noiseless running, accomplishing, as will be readily understood, more than two rotary gigs could do, permitting contacts and tensions for each cylinder to be adjusted at will while the machine is running, all the operations being accomplished by means of conveniently located handles on the machine. The power is almost wholly transmitted by belts and chain, there being but four gears in all, a feature resulting in a quiet and easy machine. There are three applications of cloth to each cylinder and these are independently adjustable while gigging, so that the gig effects for one run, this for each cylinder, can be regulated to a nicety; however, if it is desired to apply the cloth but twice to each cylinder it can be readily done. The cylinders may be run in the same or reverse directions by the connecting belt either being open or crossed, a tightening pulley mounted on an adjusting quadrant, taking up this belt when it runs open; certainly a handy feature, since it saves splicing the belt when reversing the cylinders. The cloth is carried through the machine by five draft rolls of large diameter, two of which have large plate frictions. The tension of the cloth can thus be adjusted independently for each cylinder according to its work and direction of rotation, and all while the machine is running. On account of the application rolls being covered with brass, the cloth can therefore be left on the rolls over night or any length of time without danger of rust marks. A large diameter stretch roll is located in front of each cylinder, making two to the machine, and their stretching capacity is adjustable so they may set to stretch the fabric under operation, as much or as little as wanted within their range. The cloth feed can be stopped and the cylinder left running by means of a clutch and lever arrangement.

(To be continued.)

## THE USE AND ADVANTAGES OF STEEL DOUP HEDDLES.

The greatest disadvantage in gauze or leno weaving is the wearing out of the doup, caused by the immense amount of chafing that the doup is subjected to during weaving.

Not only is the material these doups are manufactured of very expensive—either the finest long stapled Sea Island cotton, worsted or silk—but the wearing out of the doups during weaving requires restringing of new doups in their place by the weaver, and thus consequent stoppage of loom and loss in production to the manufacturer.

To do away with these regular doups, as used for the last one hundred years or more for gauze or leno weaving, has been the object of many an inventor. Clumsy contrivances were used to accomplish this purpose. First, combs with pins; next, clumsy wire heddles, being affairs which always worked only for low textured fabrics—few doups per inch—until we now meet with a metal doup heddle, as is shown in the accompanying illustrations, which is so constructed that these heddles are applicable to high textures, fancy effects, etc., in fact more or less do the work required in connection with average grades of textiles from regular doups.

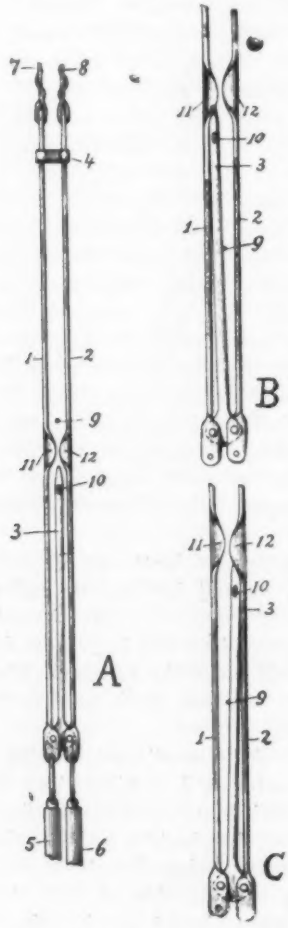
No stoppage of loom, no imperfection of the fabric caused by broken string doups, greater production, etc., are the advantages we must accord to this heddle, a description of which will be of the greatest of interest to designers, weavers and manufacturers of leno work.

The new doup needle as carrying the whip thread is connected or pivoted to the heddle strips in such manner as to be tilted toward one or the other heddle strip by their alternate operation, being thereby caused to pass alternately on one side or the other of the standard warp thread or threads extending between the heddle strips.

Of the accompanying illustration, Fig. A is a front view of the attachment, and Figs. B and C front views of a portion of the attachment when the same is lifted to throw the whip thread to one side on the other, re-

spectively, of the standard warp thread or threads.

A description of the construction and operation of the new heddle is best given by quoting numerals of references accompanying said illustrations, and of which 1 and 2 indicate the heddle strips, 3 the doup needle, pivoted at its lower end to both heddle strips, and 4 is a connecting device, joining the two heddle strips and holding them a definite distance apart while permitting them to have

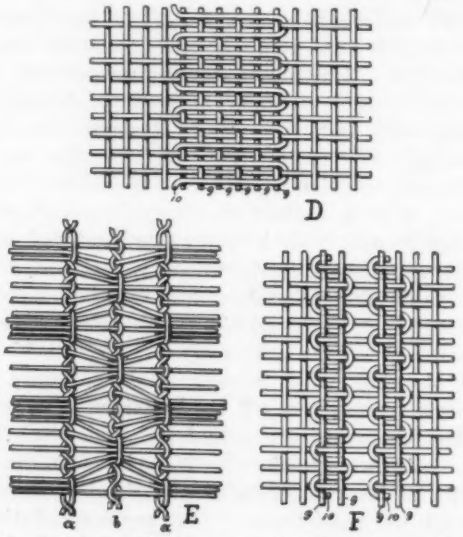



independent vertical movements. Five and 6 are weights secured, respectively, to the lower ends of the heddle strips 1 and 2, which weights, however, if desired, may be dispensed with. Seven and 8 are the cords attached, respectively, to heddle strips 1 and 2 and leading to the jacquard or shafts of the loom.

Nine represents the standard warp thread or threads, as the case may be, extending between the heddle strips 1 and 2. Ten represents the whip thread extending through the eye of the needle 3.

Eleven and 12 are thread guides projecting inwardly toward each other from the heddle strips 1 and 2, respectively.

The operation of the new heddle is thus: Assuming the device to be in its lowered position, as shown by means of Figs. 1 and 2, the lifting of cord 8 lifts the whole attachment, comprising both heddle strips and the needle. Initially, however, the strip 2 lifts a




short distance independently of strip 1, causing the needle to be thrown to the left, as shown in Fig. B, and as the whole device is lifted, the whip thread 10 passes to the left of the standard warp thread or threads 9; guide 11 keeping the standard warp thread or threads from catching between strip 1 and needle 3.

The respective pick of filling is then inserted, the tension upon cord 8 released, and when in turn by gravity, the device descends to its original position.

For producing the next pick (twist) the cord 7 is lifted, which first throws the needle 3 to the right, i. e., against strip 2, and then lifts the whole device, causing this time the

whip thread 10 to pass to the right of the standard warp thread or threads, in order to produce the required twist effect in the fabric, the procedure itself, being readily understood by means of consulting Fig. C.

Of the accompanying diagrams of woven leno fabrics, Fig. D shows such a one as produced by means of one whip thread 10, working against six standard or ground warp threads 9. Diagram E shows the use of two sets of doups, a and b, respectively, one whip thread working against one standard warp thread in either instance, such attachment (i. e., doup) being operated upon independently from the other. Diagram Fig. F shows the formation of a centre selvage as can be readily produced by means of the new heddle, one whip thread working in this instance against two standard threads.

## A CONTINUOUS CLOTH PRESS.

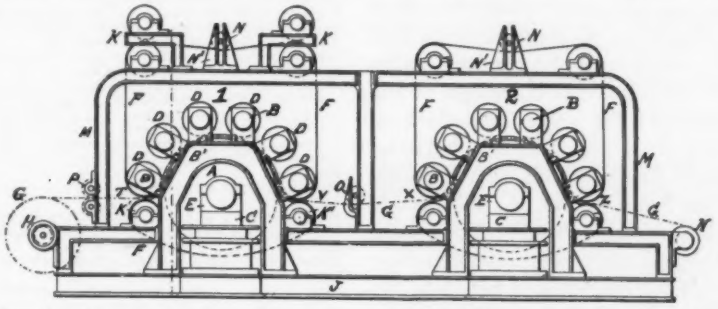
This machine is of English origin, and has for its object to supplant hydraulic and regular rotary presses used; the builders of the machine claiming for its advantages a perfect finish which can be varied to suit the requirements of special fabrics, and this in connection with an increase in production over former makes of machines.

With reference to its construction, the press consists of two sections, each complete in itself. The first section consists of a centrally mounted heated main cylinder, surrounded by smaller cylinders also heated, the cloth being passed to receive the finish between the large and the small series of rollers; but to give the finish and to prevent the cloth coming in direct contact with the rollers, two endless sheets or webs of paper surround the cloth while it is being passed through the rollers. Next, the fabric passes, under a suitably placed tension roller, to the other section of the press, and which is a duplicate of the first section, but most frequently is used cold, being used in this condition for setting the finish as is obtained in the first section. However, if required for finishing certain fabrics, this second section, i. e., the corresponding rollers to the first section, can also be heated.

### CONSTRUCTION OF THE PRESS.

The accompanying illustration is a side elevation of this press, the operation of which will be readily understood by quoting numerals of references in connection with the description of this press and of which 1, indicates the first, or heated section, and 2 the second, or cold section; the description as given in connection with section 1, referring at the same time to the corresponding parts in section 2.

A represents the heated central drum or main cylinder of the press, resting in the



bearing E of the hydraulic rams C, as mounted on the bed plate J; the said rams C being operated by pumps or other means. D represents the series of six smaller cylinders which also are heated, they being fixed in the adjustable bearings B, which in turn are carried by a frame B′, to the bed plate J. The rollers D are caused to revolve at the same superficial speed as the central drum A, by means of spur wheels fast to one end of their shaft, and which gear into larger wheels fixed to the central drum A. F represents two endless paper aprons, which pass between the surface of the small cylinders D and the central drum A. The upper of these aprons F

is passed between rollers K, which in turn are also heated, and are mounted in bearings carried by the framework M, these rollers serving to keep the bands F at the required degree of tension, and to feed them at the proper rate of speed between the central drum A and the series of rollers D. These rollers D are heated by steam or any other medium, and are driven direct by means of straps from the machine. The lower apron F is carried by rollers K', which are also heated in a similar manner to rollers K, and are also driven direct from the machine. Tension roller N, revolving in steady brackets N', keeps the upper apron F at a suitable degree of working stretch, i. e., its proper tension.

H represents the batches of cloth as are located at either end of the machine for letting off and collecting the pieces of cloth on their passage through the machine, and which are also driven direct from the machine.

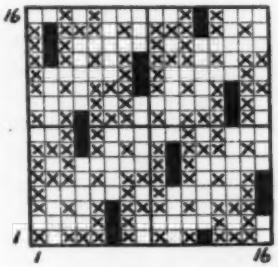
A tension roller O is supported in brackets fixed to the framework M between the two sections of the machine, and keeps the cloth suitably stretched in its passage from the first or hot finishing section of the machine to its second or cold setting section trough of the machine, G indicates the run of the cloth to be finished and P a spiral brush between which the cloth passes from the delivery roller H to the hot cylinder A, this brush working the cloth in opposite directions from their centers toward their outer ends, and so remove dirt or loose matter and take out the creases prior to the cloth being subjected to heat and pressure. These brushes are driven also from the main shaft of the machine.

The amount of heat for cylinder A and rollers D, K, and K' of the first section of the machine can be readily regulated to a nicety, by means of suitable valves, to suit any particular finish required for the cloth under operation.

Section 2 of the machine is in all respects similar to the one thus explained, except that it is entirely distinct from the first section and that its rollers and main cylinder remain cold or at the same temperature as the room in which they work, or, again, they may be artificially cooled to the necessary degree by passing through them cold air, water, etc., the object of the cooled rollers being to permanently set the finish put upon the cloth by the heated rollers in the first portion of the apparatus.

## NOVELTIES FROM FOREIGN SOURCES.

### Worsted Suiting.




*Complete Weave.*
Repeat 16 × 16.

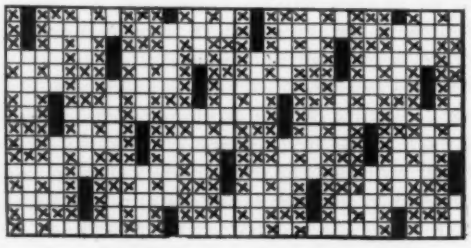
*Warp:*—7,565 ends, 16 harness, straight draw.
*Reed:*—14½ × 8 = 65¼ inches wide in loom.
*Dress:*—

1 end, 2/48's worsted, black and 200/2's white silk, twist.
1 end, 2/48's worsted, black and white twist, twisted over with single 48's worsted, black.
6 ends, 2/48's worsted, dark gray.
1 end, 2/48's worsted, black and 200/2's white, silk twist.
1 end, 2/48's worsted, black and white twist, twisted over with single 48's worsted, black.
2 ends, 2/48's worsted, black and gray twist.. } × 16 = 64 ends
2 ends, 2/48's worsted, dark gray..... }
2 ends, 2/48's worsted, dark gray..... } × 2
2 ends, 2/48's worsted, black and gray twist } × 2
2 ends, 2/48's worsted, black and gray twist } × 2 } × 8=128 ends
2 ends, 2/48's worsted, dark gray..... } × 2
2 ends, 2/48's worsted, black and gray twist.
2 ends, 2/48's worsted, dark gray.

256 ends in repeat of pattern.

*Filling:*—105 picks per inch, same arrangement as to counts and colors as used for warp.
*Finish:*—Worsted finish, 56 inches wide.

### Worsted Melton Suiting.



*Complete Weave.* Repeat 32 × 16.
*Warp:*—5900 ends, 16 harness, fancy draw.
*Reed:*—21 × 4 = 70 inches wide in loom, split baskets.
*Dress:*—

2 ends, 2/32's worsted, black.
6 ends, 2/36's worsted, dark mix.

8 ends, repeat of pattern.

*Filling*:—92 picks per inch, arranged thus :

2 picks, 2/52's worsted, black and white twist, twisted over with single 23's worsted, black.
10 picks, 2/32's worsted, black.
2 picks, 2/52's worsted, black and white twist, twisted over with single 32's worsted, black.
2 picks, 2/32's worsted, black.

16 picks, repeat of pattern.

*Finish*:—Worsted Melton finish, 56 inches wide.

## Worsted Trousering (Silk Stripe).

*Complete Weave.* Repeat 60 × 9.

*Warp*:—7,695 ends, 16 harness, fancy draw.

*Reed*:—19½ × 6 = 65¾ inches wide in loom.

*Dress*:—

| | | |
|---|---|---|
| 1 end, | 2/60's worsted, black, twisted over with 200/2's silk, white | 1 end |
| 1 end, | 2/60's worsted, black and white, twist | 1 end |
| 10 ends, | 2/60's worsted, black and gray, twist | 10 ends |
| 1 end, | 100/2's pearl, silk | 1 end |
| 1 end, | 2/60's worsted, black | 1 end |
| 1 end, | 2/60's worsted, light gray | 1 end |
| 1 end, | 100/2's pearl, silk | 1 end |
| 2 ends, | 2/60's worsted, black and gray, twist | 2 ends |
| 2 ends, | 2/60's worsted, black and orange, twist | 2 ends |
| 4 ends, | 2/60's worsted, black and gray, twist | 4 ends |
| 1 end, | 100/2's pearl, silk | 1 end |
| 1 end, | 2/60's worsted, black | 1 end |
| 1 end, | 2/60's worsted, light gray | 1 end |
| 1 end, | 100/2's pearl, silk | 1 end |
| 2 ends, | 2/60's worsted, black and gray, twist | 2 ends |
| 12 ends, | 2/60's worsted, black and gray, twist | 12 ends |
| 1 end, | 2/60's worsted, black, twisted over with 200/2's silk, white | 1 end |
| 1 end, | 2/60's worsted, black and white, twist | 1 end |
| 1 end, | 2/60's worsted, black and gray, twist | 1 end |
| 1 end, | 100/2's pearl, silk | 1 end |
| 1 end, | 2/60's worsted, light gray | 1 end |
| 2 ends, | 2/60's worsted, black and gray, twist | 2 ends |
| 1 end, | 2/60's worsted, black and white, twist | 1 end |
| 3 ends, | 2/60's worsted, black and gray, twist | 3 ends |
| 2 ends, | 2/60's worsted, black and gray, twist | 2 ends |
| 1 end, | 2/60's worsted, black and white, twist | 1 end |
| 1 end, | 2/60's worsted, black and gray, twist | 1 end |
| 1 end, | 100/2's pearl, silk | 1 end |
| 1 end, | 2/60's worsted, light gray | 1 end |
| 1 end, | 2/60's worsted, black and gray, twist | 1 end |
| 1 end, | 2/60's worsted, black, twisted over with 200/2's silk, white | 1 end |
| 1 end, | 2/60's worsted black and white, twist | 1 end |
| 10 ends, | 2/60's worsted, black and gray, twist | 10 ends |
| 1 end, | 2/60's worsted, black | 1 end |
| 1 end, | 100/2's pearl, silk | 1 end |
| 1 end, | 2/60's worsted, light gray | 1 end |
| 1 end, | 2/60's worsted, black | 1 end |
| 2 ends, | 2/60's worsted, black and gray, twist | 2 ends |
| 2 ends, | 2/60's worsted, black and orange, twist | 2 ends |
| 4 ends, | 2/60's worsted, black and gray, twist | 4 ends |
| 1 end, | 2/60's worsted, black | 1 end |
| 1 end, | 100/2's pearl, silk | 1 end |
| 1 end, | 2/60's worsted, light gray | 1 end |
| 1 end, | 2/60's worsted, black | 1 end |
| 2 ends, | 2/60's worsted, black and gray, twist | 2 ends |
| 12 ends, | 2/60's worsted, black and gray, twist | 12 ends |
| 1 end, | 2/60's worsted, black, twisted over with 200/2's silk, white | 1 end |
| 1 end, | 2/60's worsted, black and white, twist | 1 end |
| 1 end, | 2/60's worsted, black and gray, twist | 1 end |
| 1 end, | 100/2's pearl, silk | 1 end |
| 1 end, | 2/60's worsted, light gray | 1 end |
| 2 ends, | 2/60's worsted, black and gray, twist | 2 ends |
| 1 end, | 2/60's worsted, black and white, twist | 1 end |
| 3 ends, | 2/60's worsted, black and gray, twist | 3 ends |
| 2 ends, | 2/60's worsted, black and gray, twist | 2 ends |
| 1 end, | 2/60's worsted, black and white, twist | 1 end |
| 1 end, | 2/60's worsted, black and gray, twist | 1 end |
| 1 end, | 100/2's pearl, silk | 1 end |
| 1 end, | 2/60's worsted, light gray | 1 end |
| 1 end, | 2/60's worsted, black and gray, twist | 1 end |

Repeat of pattern: 120 ends

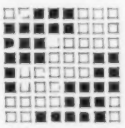
*Filling*:—82 picks per inch, arranged thus :

2 picks, 2/60's worsted, black.
1 pick, 3 run, woolen yarn.

3 picks, repeat of pattern.

*Finish*:—Worsted finish, 56 inches wide.

## Worsted Suiting.



*Complete Weave.*
Repeat 8 × 8.

*Warp*:—5,575 ends, 16 harness, straight draw.

*Reed*:—21 × 4 = 66½ inches wide in reed.

*Dress*:—

2 ends, 2/56's worsted, black and white twist, twisted over with single 56's black worsted.
4 ends, 2/40's worsted, black.
4 ends, 2/40's worsted, black and gray, twist.
6 ends, 2/40's worsted, black.

16 ends, in repeat of pattern.

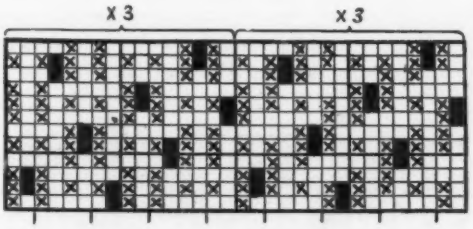
*Filling*:—85 picks per inch, arranged thus:—

2 picks, 2/56's worsted, black and white twist, twisted over with single 56's black worsted.
4 picks, 5⅛ run, woolen yarn, black.
4 picks, 2/40's worsted, black and gray, twist.
6 picks, 5⅛ run, woolen yarn, black.

16 picks, in repeat of pattern.

*Finish*:—Worsted finish, 56 inches wide.

## Worsted Suiting.




*Complete Weave.* Repeat 96 × 12.

*Warp*:—7,296 ends, 16 harness, fancy draw.

*Reed*:—28 × 4 = 65⅛ inches wide in loom. The reeding as to be done in connection with the weave being indicated below the weave.

*Dress*:—

| | | | | |
|---|---|---|---|---|
| 1 end, | 2/64's worsted, black and 160/2's silk, white | = 1 | | |
| 2 ends, | 2/64's worsted, black | = 2 | | |
| 1 end, | 2/64's worsted, black and gray, twist | × 2 = 4 | × 5 = 40 | × 3 = 144 ends |
| 1 end, | 2/64's worsted, black | | | |
| 1 end, | 2/64's worsted, black | = 1 | | |
| 1 end, | 2/64's worsted, black and gray, twist | = 1 | | |
| 2 ends, | 2/64's worsted, black | = 2 | | |
| 1 end, | 2/64's worsted, black and gray, twist | × 2 = 4 | | |
| 1 end, | 2/64's worsted, black | = 1 | | |

1 end, 2/64's worsted, black and 160/2's silk, white....= 1 end
2 ends, 2/64's worsted, black.....= 2 ends
1 end, 2/64's worsted, black and gray, twist } × 2.....= 4 ends
1 end, 2/64's worsted, black. }
1 end, 2/64's worsted, black.....= 1 end
1 end, 2/64's worsted, black and gray, twist.....= 1 end
2 ends, 2/64's worsted, black.....= 2 ends
1 end, 2/64's worsted, black and gray, twist.....= 1 end
1 end, 2/64's worsted, black.....= 1 end
1 end, 2/64's worsted, black and gray, twist.....= 1 end
2 ends, 2/64's worsted, blue.....= 2 ends
1 end, 2/64's worsted, black and gray, twist.....=1
2 ends, 2/64's worsted, black.....=2
1 end, 2/64's worsted, black and gray, twist. } ×4=4 } × 2.....= 16 ends
1 end, 2/64's worsted, black. }
1 end, 2/64's worsted, black.....=1
1 end, 2/64's worsted, black and gray, twist.....= 1 end
1 end, 2/64's worsted, black.....= 1 end
2 ends, 2/64's worsted, green.....= 2 ends
1 end, 2/64's worsted, black.....= 1 end
1 end, 2/64's worsted, black and gray, twist.....= 1 end
2 ends, 2/64's worsted, black..... } × 2.....= 6 ends
1 end, 2/64's worsted, black and gray twist..... }
1 end, 2/64's worsted, black.....= 1 end
1 end, 2/64's worsted, black and gray, twist.....= 1 end
2 ends, 2/64's worsted, black.....= 2 ends

Repeat of pattern: 192 ends

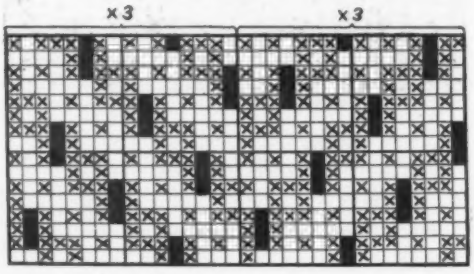
*Filling*:—96 picks per inch, arranged thus:—

1 pick, 2/64's worsted, black, and 160/2's silk, white.....= 1 } × 3 = 144 picks
1 pick, 3½ run woolen yarn, black.. } × 15 = 45
2 picks, 2/64's worsted, black..... }
1 pick, 3½ run woolen yarn, black .....= 1
1 pick, 2/64's worsted, black.....= 1
1 pick, 2/64's worsted, black, and 160/2's silk, white..= 1 pick
1 pick, 3½ run woolen yarn, black .. } × 4.....= 12 picks
2 picks, 2/64's worsted, black..... }
1 pick, 3½ run woolen yarn, black .....= 1 pick
1 pick, 2/64's worsted, black.....= 1 pick
1 pick, 2/64's worsted, blue.....= 1 pick
1 pick, 3½ run woolen yarn, black.. } × 5.....= 15 picks
2 picks, 2/64's worsted, black..... }
1 pick, 3½ run woolen yarn, black.....= 1 pick
1 pick, 2/64's worsted, black.....= 1 pick
1 pick, 2/64's worsted, green.....= 1 pick
1 pick, 3½ run woolen yarn, black.. } × 4.....= 12 picks
2 picks, 2/64's worsted, black..... }
1 pick, 3½ run woolen yarn, black.....= 1 pick
1 pick, 2/64's worsted, black.....= 1 pick

Repeat of pattern: 192 picks

*Finish*:—Worsted finish, 56 inches finished width.

## Mantle Cloth.




*Complete Weave.* Repeat 96 × 16.

*Warp*:—7,296 ends, 16 harness, fancy draw.
*Reed*:—13 × 8 = 70 inches wide in loom.
*Dress*:—

180 ends, 2/52's worsted, brown mix.
2 ends, 2/52's worsted, green.
6 ends, 2/52's worsted, brown mix.
2 ends, 2/52's worsted, green.
2 ends, 2/52's worsted, brown mix.

192 ends, repeat of pattern.

*Filling*:—115 picks per inch, arranged thus:—

2 picks, 2/52's worsted, green.
6 picks, 2/52's worsted, brown mix.
2 picks, 2/52's worsted, green.
230 picks, 2/52's worsted, brown mix.

240 picks, repeat of pattern.

*Finish*:—Worsted Melton finish, 56 inches wide.

## THE SUCCESSFUL MANAGEMENT OF THE CARD ROOM IN A COTTON MILL

is the back bone of success of the complete cotton spinning plant. One of the most important qualifications of the overseer or manager of this department is the proper management of his help and the continual oversight of the machinery under his charge. It is not sufficient enough for him to simply examine the cards in the morning or at noon and then give no more attention to them during the day, quite the contrary; he has to be always on the lookout for trouble in one way or the other, he has to instruct his men in charge to report any irregularities in the work of the machinery or product at once. This not only refers to the card room, but also to the picker room, due to the fact that so much is required in this latter department in preparing the several grades of cotton; for the preparatory processes of picking are of such a nature as to require the constant attention of the manager. There is no doubt that this department is in very many instances neglected, and this to such an extent as to seriously interfere with the process of carding, spinning, etc.

### GRADING.

One of the most important points which requires the careful attention of the overseer is that of grading the cotton. It will not pay to slight this part of the work. A most thorough system of grading cotton, previously to picking, is of the utmost importance. Cotton manufacturing is now subjected to a sharp competition and in very many instances this competition comes from mills that are equipped with the latest and most improved machinery, which consequently requires that the most careful consideration and treatment be given to the mixing of the cotton. Now, since the cotton for these improved machines generally is carefully graded and mixed, what is to be expected of old machinery such as will be found in some of our cotton mills at

the present time unless the same care is taken? As is well known, cotton is bought in large invoices and sent to the storehouses of the mills for future use. When these invoices are bought, samples of each lot are sent to the office of the mill and placed in the sample room, where the overseer of carding and picking has charge of them. This is the time when care must be exercised in selecting the proper grades for mixing. The value of all cotton is determined by the length and fineness of the staple, as well as absence of impurities.

The successful manager should have a thoroughly sound knowledge of every point connected with the material, its qualities, and the characteristics of each sample submitted to his notice, whilst a delicate touch and good eyesight are also much needed physical qualities. Occasional microscopic investigations will be required. There are several principal factors in a good cotton: length of staple, uniformity, strength, color, cleanliness, and flexibility.

The first can be found by the gradual reduction of a tuft by the hand until individual fibres are drawn from the tuft, so as to enable their length to be ascertained. To do this well only requires a little practice, and no explanation can make anyone perfect. In examining the cotton, not only should its length be ascertained, but the uniformity of the length of the fibres in the sample. If these are uneven the cotton is of less value than if it were a little shorter, but of greater evenness.

The color of any cotton affects the question, because of the necessity of keeping an even shade of yarn.

The cleanliness affects the amount of waste made, which is a matter of great importance. It can be ascertained on inspection, and by shaking the sample over paper it will be seen if it contains much dirt or sand.

The flexibility of the cotton can be ascertained by the feel, which will show if it is soft or harsh, this again being a matter only acquired fully by practice. Flexibility does not necessarily imply a lack of strength, which some might regard as a more essential factor, but rather includes it. A weak fibre would not be a flexible, but a brittle one, and without considerable strength flexibility in the true sense cannot exist. On the other hand, a fibre might be strong and harsh and yet not flexible, being, therefore, not so suitable for spinning.

Warp yarns, as a rule, are spun for higher counts compared to filling, and the higher the count spun the greater the necessity for a long uniformly even staple. Again the warp yarn has to stand considerable strain during weaving, a feature not required by the filling, hence the strongest cotton has to be used for warp yarns. Filling, although required to be made from fibres of proper length and strength, in order not to influence the strength of the fabric, yet requires a soft and flexible fibre.

### MIXING.

Suppose that an invoice of five hundred bales has been bought, marked a certain grade, and that twenty-five bales of this lot are sent to the picker room every week. The original sample of this invoice may indicate a certain grade, say strict good middling, but it will not be safe to rely on the grade as sampled. In order to avoid any shortage it is the duty of the overseer to examine each and every bale opened.

It is quite often the case, when the bales of cotton are opened, to find that several of them are not up to sample. The cotton may not be the same in color, or it may be full of leaf and sand, whereas the sample grades are clean and of a good color. Then, again, bales of cotton when opened may be found "off" in length of the staple. Some bales may be long stapled, while others are short. It will thus be very readily seen that it will be profitable to give the closest attention to the opening and mixing of the different grades of cotton.

### PICKING.

When taken from the mixing, the cotton is operated upon by a series of machines, whose object is to open out, clean the fibre, and finally form it into a sheet of uniform width and thickness, which is rolled into a lap ready to be fed in combination with others in succeeding machines. The machines which accomplish these processes are called hopper feeders, pickers and scutchers, respectively.

The transferring of the mixing to the picking, or otherwise the feeding of the picker direct from the bale or bales, can be done either by means of open feeding or by a hopper feeder, the last method being the most satisfactory. This system of hopper feeding is an American invention, and now universally adopted all over the world, having by the cotton industry been taken from the woolen industry, and where this process of hopper feeding has been in use from ten to fifteen years before it was thus adopted by the cotton industry.

With reference to the treatment of the cotton at the pickers, it is just as necessary to watch a set of scutchers as a section of cards if good work is desired—that is to say, the same care should be exercised on the part of the operative tending the scutchers to see that the laps are constantly supplied to the aprons. This is undoubtedly a very important part of the work. It will not do to run a set of finisher scutchers with but three laps where there should be four, or with but two laps where there should be three; and again instances might arise where by means of extra carelessness on account of the operative, two laps only might be running for a time and where four are required. Such carelessness on account of the operative cannot help but result in uneven laps, and in turn in uneven yarn, and trouble all around through the mill, and for which reason the operative must be instructed that it is absolutely necessary for him to always keep the full complete set of laps required on the scutcher feed table.

### WASTE.

Another point which deserves careful attention by the manager is the treatment of the waste as made in the mill through the various departments, and which in turn he has to work up again in yarn.

The waste usually returned to a mixing room is that which is technically known as "soft" waste, that is, such waste as contains little if any twist. It includes waste from the carding, combing, drawing, roving and spinning departments; but excludes yarn waste ("hard waste") or carding engine flat waste or fly ("short waste") which waste has to be kept separate, and if re-used by a mill can only be done in connection with cheap and low counts of yarns, waste yarns. Where this system of using soft waste is in use, great care should be exercised to carefully spread the waste over the mixing, using it at the same time very sparingly, or else considerable trouble and irregularity will be introduced by the laps licking, as well as by the yarn getting weak, since the fibres of this waste have been shortened by the various operations they have passed through, and many being short fibres from the start.

If using too much of this waste a very great loss can soon be sustained by means of irregular work, bringing with it a whole train of attendant evils. We will find greater accumulations of fly and waste in all the different processes, especially in the spinning department where it displays itself very conspicuously by the increased amount of waste made. This loss, however, is intensified by the fact that in a great majority of instances the operatives experience great difficulty in coping with the increased work, and in consequence cannot exercise the same vigilance over their work. How much of this soft waste to use in connection with a mixing varies considerably according to the counts of yarn that are required to be spun from cotton under operation. Some mills prefer to use up much of their waste in filling lots, upon the basis that the filling does not require to be a strong yarn. This may be all right with some fabrics, but it does not apply in all cases. For example with "print cloths," where warp and filling are of equal importance all around, and where the amount of size used is only just sufficient to sustain the warp while the cloth is being woven, it raises an interesting point as to where the waste ought to be mixed. If it is used in connection with the filling it means a weaker filling, and if it used in connection with the warp it may mean the same fault; but the warp yarn, and with it the waste, receives a coating of size, and although it is lightly used yet it imparts a certain amount of strength, which could not be imparted to the filling, and therefore it may sometimes be found that waste is used in connection with warp mixing. It may look like economy to work in a large percentage

of waste, however, this is not always a good policy.

A good plan to use of waste, as that which comes in the form of flyings from the cards or clean drawing and roving waste, i. e., soft waste, is to carefully mix these various wastes at a separate scutcher, forming the mass into a lap, and which lap in turn is run in, i. e., mixed in at the feed table of the finisher scutchers.

With reference to hard waste, the same must be garnetted and carded on special machines, and then carefully mixed with the other grades of waste in forming the mixing lap previously referred to.

It will be well for the manager of the card room to have his second hand carefully watch this waste question, see that not too much of it accumulates, but at the same time again that not too much of it is used at one time.

One of the most annoying features in a card room is poor laps, and from which it is evident that the forming of good finisher scutcher laps is very essential and must receive the greatest of care by the manager.

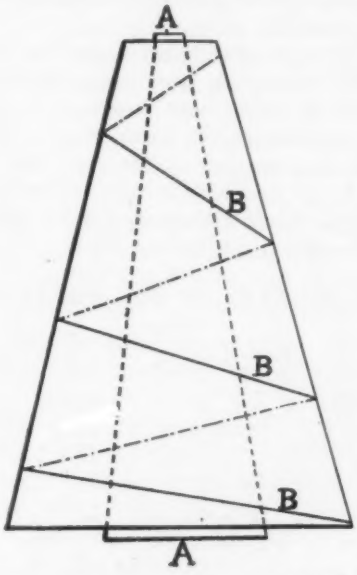
### SYSTEM.

Another important item for the successful manager of a card room and who has charge of a hundred or more operatives, and this with a multiplicity of details demanding his attention, is system. The operatives must be made to understand that the machines must be started when the speed is on, for five or ten minutes are of considerable importance, when the week's work is footed up, where, for example, 15,000 lbs. of finished work is required. If the employees understand that they are required to be at their respective machines when the speed is fully up, they will be at their posts as a rule, and much is gained thereby in the total production.

In starting work where an overseer has several rooms it will require some time to get everything in running order unless each room is supplied with some person in the capacity of second or third hand. This will relieve the overseer to some extent. Operatives go and come more or less, and someone must take their places. This will require considerable care on the part of the overseer in providing spare help, and at the same time avoiding too great an increase in the expense of running the room. In holding spare hands in reserve to take the place of those who are out, it should be the object of the overseer to secure the very best help possible, so that the production or quality of the work will not fall off while the regular operators are away. It does not pay to keep a poor class of spare hands; neither will it pay to change old hands for new, as a rule.

## AN IMPROVED METHOD OF WINDING CONES.

In the method of winding cones as heretofore practiced, the yarn is wound in reverse coils upon a conical tube driven by contact with a drum. When the yarn is thus wound, its coils are nearly uniform (that is, with the coils the same distance apart, and each adjacent portion of the coil practically parallel, except a slight increase of angle toward the apex, which results as a consequence of the decreased diameter toward this end), there is more or less resistance to the uncoiling of the yarn drawn from the top of the cone, and which resistance increases as the yarn is uncoiled from the upper end of the cone and is withdrawn from near the base.




The new method of winding cones has for its object to overcome this trouble by wind-

ing every spiral, as shown in the accompanying diagram, that is, with a gradually increasing pitch from the base to the end at an angle greater than normal.

It is employed by the A. T. Atherton Machine Co., Pawtucket, R. I., in their new winder.

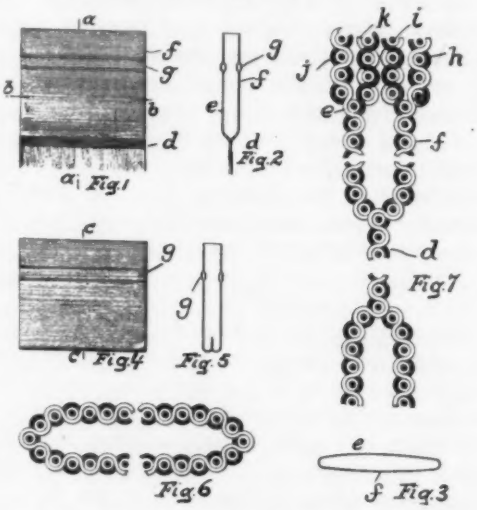
With reference to the diagram, A indicates the tube, upon which the yarn is laid, as usual, by means of said tube being brought into contact with a winding drum, so as to be rotated thereby as the yarn is passed between the two and wound onto the tube; this time, however, not in coils or spiral layers of equal distances apart from each other, but laid in coils, which are much more open toward the upper end of the cone, that is, with a gradually increasing angle, as is clearly shown in the diagram by means of line B, the angle of the reverse coils gradually decreasing toward the base of the cone.

As a result of thus laying the yarn, if the tension is properly regulated, the body of the yarn is denser and thicker at the base of the cone than at the point or opposite end, and when consequently the yarn will deliver more freely and with a much more uniform resistance than from cones where the coils are of uniform pitch throughout.

## A NOVELTY IN BAG WEAVING.

In the April, 1904, issue of the Textile World Record we explained the principles of bag weaving, i. e., gave a thorough description of the construction of these fabrics as well as their execution on the loom, and upon which principle of weaving the present novelty bag is built, the object being to produce a bag blanket, comprising woven fabrics arranged to form the opposite sides of the bag, the said fabrics being interwoven at intervals in a transverse direction and also at intervals in the direction of their lengths, each of said woven fabrics having their bodies divided at intervals into separate fabrics to form puck-cord pockets, the said pockets being located at a distance from the transversely interwoven portions of the fabrics and from the line of cut.

Of the accompanying illustrations, Fig. 1 is a view of the bag in side elevation as it appears when used with fringe depending from the bottom. Fig. 2 is a section on the line A-A of Fig. 1. Fig. 3 is a section on the line B-B of Fig. 1. Fig. 4 is a view of the bag in elevation as it appears when used with fringe concealed, and Fig. 5 is a section of the same in the plane of the line C-C of Fig. 4. Fig. 6 is a diagrammatic view in cross-section, showing the manner of weaving the bag integral; and Fig. 7 is a similar view, in longitudinal section, showing the manner of interweaving the opposite sides of the bag to form the double fabric through which the cut is to be made to separate the blanket into individual members or bags.




The bags, as previously mentioned, are to be woven in series in a continuously woven strip of tubular form (see Fig. 6), the walls of the strip being brought together, for forming one structure, at intervals, as at d, for the purpose of finally severing the blank either midway of the double fabric, at some point intermediate of the two interwoven portions.

In the present instance we have shown the intervening portion of the strip between two successive interwoven portions cut in the middle, forming bags, the side walls of which are denoted by e f, and the closed bottoms of which are denoted by d.

### A FOUR PLY STRUCTURE.

To form an annular pocket for the reception of the "pucker ribbon" or cord, the sheds,

which form the front and back of the bag, are separated for a short distance, as at g, each into independent sheds, h i and j k (see Fig. 7), and these independent sheds again united to continue the weaving of the body of the bag, as may be desired.

FANCY EFFECTS.

As thus woven, the bag may be ornamented by interweaving any colors and may be formed of either cotton, silk, or other material, and when used as a fancy bag may be ornamented by intervening figures or otherwise ornamenting its exterior.

ADVANTAGES.

By weaving the bags in series, as thus explained, they can be manufactured at a very low cost all ready for use, requiring no sewing or stitching to complete them, while their structure is such that they will not be liable to rip.

## TESTS FOR DISTINGUISHING AND ESTIMATING DIFFERENT FIBRES USED IN TEXTILE MILLS.

A quantitative examination of textile fibres is not, as a rule, a difficult matter, so long as they remain in their original unmanufactured state, and the same also applies to the estimation of the fibres in crude yarns and fabrics in an unfinished condition. However, the yarns, etc., which have been bleached, dyed, printed and dressed are found to be more difficult to analyze, owing to the great modifications often produced by the employment of high temperature, steam, bleaching materials or dyestuffs, etc., and by mechanical influences, and consequently different methods must be used to prove the correctness of any analysis.

In any case the microscopical examination is the best method. Like all other testing methods, its object is of a threefold character, namely, to determine the constitution of the fibres, the relative proportions present, and the quality of said fibres.

Characteristic Microscopic Appearance of True Silk: Under the microscope raw silk appears as two structureless, vitreous rods of fibroin glued together, and exhibiting fine striations when treated with dilute chromic acid. In the case of unboiled silk, the sericin covering is either intact or else reveals cracks and foldings, and is entirely lacking in places.

In loaded silk, the fibres appear enclosed in a barky layer of loading material, which occasionally exceeds the fibre itself in thickness.

Characteristic Appearance of Wool: Under the microscope wool appears as a dense, uniform rod of horny material covered with flat epidermal scales, overlapping each other like roofing tiles, whilst the internal cells are hollow, elongated and spindle shaped, with a loose mass in the centre known as medulla. The latter is only found in coarse wools, where it forms either a continuous string or merely isolated patches, in either case being recognized by its darker color.

Artificial Wool, or wool which has been manufactured, can generally be detected under the microscope by the fact that some of the fibres are different in color from the bulk, thus showing that the whole has not been dyed together. The numerous broken ends, torn fibres and fragments generally present will also indicate the presence of artificial wool.

Although a separation of the different kinds of fibres present, and an approximate estimation of the proportions, can be effected under the microscope, yet this requires great experience and practice.

Characteristic Appearance of Cotton: Under the microscope the cotton fibre appears as a hollow, flattened vegetable cell, with thickened edges, and with more or less twist. It exhibits slanting granular or dark streaked markings, due to the dried cell contents, is broad at the base, and tapers off to a fine point at the tip.

Characteristic Appearance of Flax: The best fibres of the flax plant appear under the microscope as long, tubular structures, with tapered ends and thick walls, the inner cavity or lumen being quite small and visible only as a thin line. Small transverse cracks, faults and node-like swellings are also observed, but, unlike cotton, the fibre is never found twisted or flattened.

In distinguishing between the different fibres it is advisable to first employ means whereby vegetable fibres can be distinguished

from those of animal origin. The tests made use of for this purpose are as follows: (1) the combustion test; (2) the nitric acid test; (3) the picric acid test; (4) the sulphuric acid test; (5) the alkali test.

The Combustion Test: This test is based on the different behavior of vegetable and animal fibres when burnt in air, and is, owing to its simplicity, the first one to be applied.

Vegetable fibres burn quickly with a bright illuminating flame, giving off no appreciably disagreeable smell in burning, and leaving behind only a small amount of white or grey ash, composed of the mineral matters in the fibre.

Animal fibres are characterized by the fact that they burn with difficulty and without any bright flame, or else merely melt or fuse together, leaving a hard brown bead or black mass, owing to the presence of carbon enclosed in the fused mass, which is incompletely consumed by reason of the consequent exclusion of air. These animal fibres evolve a peculiar, unpleasant smell similar to that of burnt hair, feathers, or horn, owing to the presence of sulphur.

The Nitric Acid Test: This is founded on the fact that nitric acid turns animal fibres yellow, whereas vegetable fibres, except hemp and jute, are left unstained.

The Picric Acid Test: This acid also turns animal fibres yellow, while it has no influence upon the color of vegetable fibres.

The Sulphuric Acid Test: This test is really a carbonizing process, on a small scale, that is, destroying the vegetable fibres, but leaving the animal fibres unaltered, and occasionally gives reliable indications as to whether animal fibres are present with vegetable fibres.

On treating a sample of animal and vegetable fibres with dilute sulphuric acid (of about 4 deg. Be. strength), and then drying the same at a high temperature (80 deg. to 100 deg. C.), the vegetable fibre will be converted into friable brown or blackish hydrocellulose, leaving the animal fibres unaltered, or at most somewhat roughened, which is owing to the superficial scales having to some extent become lifted away from the stem of the fibre, and besides this they are slightly tinged with yellow.

The Alkali Test: If animal and vegetable fibres be boiled in 8 deg. Be. caustic potash or soda solution, for a quarter of an hour, the animal fibres will dissolve to a muddy liquid, leaving the vegetable fibres undissolved, this being of the most often used test for distinguishing animal and vegetable fibres.

The best solvent for silk is an alkaline solution of copper and glycerine, made up as follows: Dissolve 16 grams copper sulphate in 140-160 c.c. distilled water, and add 8 to 10 grams pure glycerine (sp. gr. 1.24). A solution of caustic soda has to be added gradually to the mixture till the precipitate just formed re-dissolves, but an excess of NaOH. must be avoided. This solution does not dissolve either wool or the vegetable fibres and thus serve as a distinguishing test.

Concentrated Zinc Chloride is also a solvent for silk and is made up to 138 deg. Tw. (sp. gr. 1.69), and made neutral or basic by boiling with excess of zinc oxide. The silk dissolves slowly if cold, but very rapidly if heated, forming a thick gummy liquid. This reagent may serve also to separate silk from wool and the vegetable fibres, since these are not affected by it. If water be added to the zinc chloride solution of silk, the latter is thrown down as flocculent precipitate, and if dried at 230 deg. to 235 deg. F., acquires a vitreous aspect and is no longer soluble in ammonia.

As was previously mentioned, the caustic alkalies are the best solvents for wool, while the acids have little effect in this direction unless heated. Cotton is dissolved in pure ammoniacal copper oxide; and concentrated sulphuric acid converts the fibre into a gelatinous mass at first, and by the prolonged action of the solvent it is completely dissolved.

Cotton fibre, moistened with water, and placed under a covered glass on a microscope slide, turns blue and swells up on the introduction of a little ammoniacal copper oxide under the cover glass.

Flax, like cotton, is also soluble in ammoniacal copper oxide, but with this difference, that although at first assuming a blue stain, swelling up and finally passing into solution, the flax fibre has no cuticular envelope, and does not exhibit the globular swellings found in the case of cotton.

# CORRESPONDENCE AND NOTES

## Upon Textile Topics at Home and Abroad.

### THE GROUPING OF WARP THREADS IN THE REED.

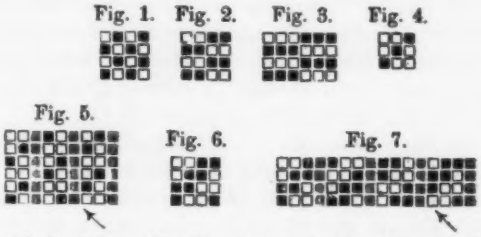
*(From Leipziger Monatschrift fuer Textil-Industrie.)*

This article will treat only of the regular reeding of warps and no reference will be made to the irregular reeding by which stripe effects are produced.

The regular reeding of warp threads presupposes the same weave across the entire width of the goods, or if two or more weaves are used that they have practically the same number of intersections and thus take an equal number of picks with the same set of warp. Under such conditions the same number of threads are drawn through each dent, that is, in the space between two adjacent thread wires, or one more thread is drawn in each alternate dent than is in the intermediate dent. This last method is adopted only when a reed with the exact number of dents required is not on hand. The general rule for reeding is that the threads belonging to two separate weave patterns should not be drawn in the same dent. The threads belonging to one weave pattern are either drawn in one dent or when there are too many of them to allow this they are divided into groups of equal size. This is only possible when the number is divisible into small fractions. When this cannot be done the grouping in the reed must necessarily be irregular and there are cases when the designer tries to avoid irregular distribution of the threads.

For a plain or taffeta weave, Fig. 1, the warp is reeded 2 threads per dent. Where the warp yarn is very coarse as in carpet fabrics 1 thread only is drawn in a dent. For a rib weave, Fig. 2, where two warp threads work together either 2 or 4 threads can be drawn in a dent. For the rib weave at Fig. 3 in which three adjacent warp threads work together the warp is reeded with either 3 or 6 threads per dent according to the size and set of the warp.

The warp is reeded 3 threads per dent with a 3-leaf twill, Fig. 4, when a smooth face is desired on fine goods of solid colors. If we are weaving with this twill heavy yarn made of coarse long stock it is difficult to raise the middle shaft and get a clear shed with threads reeded 3 per dent. In this case the warp should be reeded 2 per dent, as shown at Fig. 5 in which the position of the reed wire is indicated by the line of shaded squares. There are 3 threads in the weave pattern and 2 in each dent. By observing the first group of two threads in Fig. 5 we find that at every




third pick reckoning from the bottom of the draft both warp threads are down. As the filling thus comes to the face over the warp yarn and also opposite the reed wire it is necessarily more prominent on the face at this point than in either of the two preceding picks. The same thing occurs with each group of two threads except that the more prominent pick is one pick lower than in the preceding group. This floating of the filling causes a twill effect to the left. As the twill of the weave runs to the right a double intersecting twill effect is obtained. The warp will, however, separate much more easily when the shed is formed than if reeded with 3 threads per dent. Reeding with 2 threads per dent serves well for coarse goods or fancy patterns, but not for fine fabrics of plain colors.

We come now to the cassimere twill, Fig. 6. Here we can reed the warp with either 2 or 4 threads per dent, according to the size and set of the warp. With coarse hairy cheviot or carpet yarn reeded 4 per dent, it is difficult to obtain an orderly separation of the warp yarn on the third pick, the outer threads being pressed against the others in the group. How would 3 threads per dent answer for this

Fig. 8.

Fig. 9.

Fig. 10.

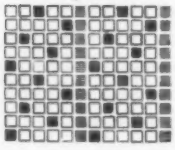
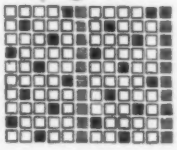


Fig. 11.



weave? Not very well, because it would produce a double intersecting twill. A cassimere twill reeded 3 threads per dent is shown at Fig. 7, in which the reed wire is indicated by the line of shaded squares. Here we find that only one warp thread is raised above the fourth and first picks respectively.

In each case the filling thread floats over two-thirds of the dent and in front of the reed wire. Over each of the other two picks (the second and third) two warp threads are raised. This irregularity occurs with each group of warp threads, but begins one pick lower than with the preceding group and consequently forms an intersecting twill. For this reason it is not suited for fine goods of solid colors. When the set of the warp is very coarse the difficulty can be remedied by reeding the warp 2 threads per dent. If the warp is set close, however, 2 threads per dent makes excessive friction between the warp and the reed and causes the work to run badly. It is therefore advisable to reed coarse yarn with 3 threads per dent. In this way the yarn does not stick together when the shed is formed. If the goods are woolen and well washed and fulled the intersecting twill effect disappears.

Next come the 5-leaf satin weaves, Figs. 8 and 9. When a smooth face is desired a warp satin like Fig. 9 is woven with the back up which makes the weave in the loom the same as Fig. 8. As is well known, goods woven with this weave are usually made with a closely set warp in order to produce as fine a face as possible. This makes the total weight of the warp much heavier than that of the filling. For 5-leaf satin weaves the warp is usually reeded 5 threads per dent.

If the warp is reeded as shown at Fig. 10 the most difficult intersection comes on the middle thread. This is due to three causes: First, because two threads pass on each side of the middle thread and thus obstruct the rising of the latter; second, because the heddle that carries this thread is farthest from the reed and it is more difficult to separate the thread from the rest of the warp because it has a relatively greater distance to travel and the tension of the raised thread is less the farther the heddle is from the reed; third, the thread on the back shaft is retarded more than the other threads.

Fig. 11 shows a simple method of overcoming this difficulty. Instead of beginning the weave with the riser at the first shaft and first pick it is begun on the second pick. In this way the middle thread in the dent is brought on the first or sixth shaft. The same result is of course obtained when the reeding is begun with the fourth thread.

It is not advisable to reed coarse hairy yarn with 5 threads per dent as it is then very difficult to get a clear shed. While the two outside threads which come in contact with the reed wire can be raised easily, the other three and particularly the middle one, are likely to cling to the other threads. All fine 5-leaf satin weaves reeded 5 threads per dent show a fine cross stripe in every repeat of the weave. This is due to the fact that the middle thread in each dent does not rise so far as the other threads; this causes a flaw.

The question now is: How many threads should be drawn in a dent with a 5-leaf satin? For fine smooth goods of solid colors the warp must be reeded with 5 threads per dent because all other methods make the face rough. For fancy goods when the warp is not too closely set other methods of reeding are allowable. When the set of the warp allows 2 threads per dent as shown in Fig.

12, an intersecting twill effect to the left indicated by the arrows is produced in the following manner: The two upper picks float above both warp threads of the first group. The two adjacent picks are found to float in the same manner over both warp threads of each group, but come one pick lower than in the preceding group, thus producing a twill effect.

If the warp is reeded with 3 threads per dent as shown at Fig. 13, the twill runs to the right with the weave twill and has but slight effect. In the first group the second and fourth picks float over all three threads. This also occurs in each succeeding group, but one pick higher, a repeat being obtained after five dents. Thus in effect, we obtain

Fig. 12.

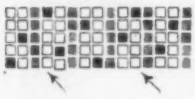


Fig. 13.

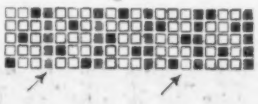


Fig. 14.

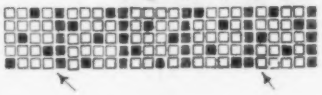


Fig. 15.

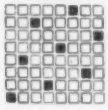


Fig. 16.

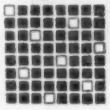


Fig. 17.

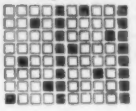


Fig. 18.

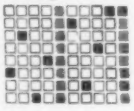
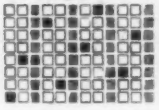


Fig. 19.



another and somewhat more pronounced twill of 15 threads on the face of the goods and which, as has already been said, runs in the same direction as the twill of the weave and is less objectionable than the intersecting twill effect.

If we put 4 threads in a dent as shown at Fig. 14, an intersecting twill covering 20 warp threads is produced on the face of the cloth. The more threads an intersecting twill covers the more objectionable it is in the cloth. How is this intersection of twills produced? It will be seen that in the first group the fourth pick floats over all 4 of the threads. This occurs with the second pick in the second group, with the fifth pick in the third group, the third pick in the fourth group and the first pick in the fifth group. This is what causes the intersecting twill on the face of the goods.

We come now to the 8-leaf satin, Figs. 15 and 16. The first is the filling, the second the warp weave. This weave is seldom if ever used with any other than 4 threads per dent, as shown in Fig. 17. For coarse warp yarn with a close set the second, third, sixth and seventh threads are raised with difficulty. This is especially true of threads 3 and 6 because these come on the two back shafts. The simplest way to lessen this difficulty is shown at Fig. 18. Here both middle threads are brought forward. The best solution of the difficulty is shown at Fig. 19 where two threads are in a dent. This method, however, can be adopted only in very loosely set fabrics or very coarse yarn. If we use 3 threads in a dent as shown at Fig. 20, a twill effect is produced running in the same direction as the weave twill. This, as has already been stated, is not so objectionable as an intersecting twill.

Fig. 21 shows a corkscrew with the smallest number of (3) threads usually inserted in one dent with this weave, as shown at Fig. 22. This produces an intersecting twill covering 21 threads. The causes of this twill will be found by observing the first group of 3 threads. Two warp threads rise above each of the first five picks and only one warp thread rises above each of the two last picks. We have here the face of the goods before us. The filling above the last 2 threads appears more on the face and this is found to be 2 picks lower in each succeeding group, by which the intersecting twill effect is produced. If, however, we reed the warp with 4 threads per dent as shown at Fig. 23, the direction of the reed twill, as it might be called, is changed and covers 28 threads, running in the same direction as the weave twill.

If we place 5 threads in a dent as shown at Fig. 24, an intersecting twill is produced covering 35 threads. In the first group of 5 threads we find one pick over which only 2 warp threads are raised, while 3 warp threads

are raised above each of the other 5 picks. This occurs one thread lower in each succeeding group of 5 threads producing an intersecting twill.

As is generally known, the defects in reeding can at times be remedied by changing the set of the warp. For example, a 7-leaf corkscrew with 3 threads per dent with not exceeding 4,500 ends of 2/64's worsted will give a perfect fabric when finished. This

Fig. 20.

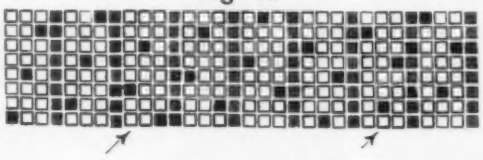


Fig. 25.

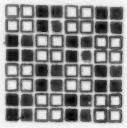


Fig. 21.

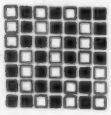


Fig. 22.

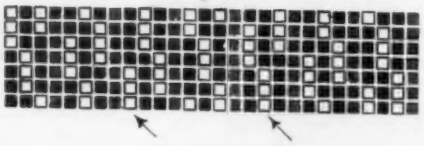


Fig. 23.

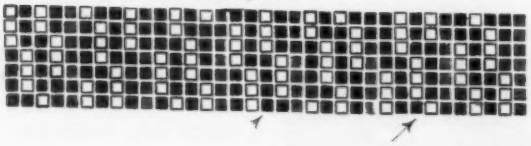
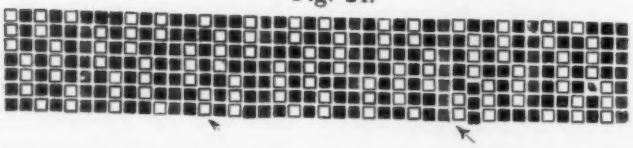


Fig. 24.



layout calls for a width from 22 to 24 dents per inch, according to the loom width of the goods. As a matter of course the reed must be made of fine wire which produces a smoother fabric. With 4,500 to 5,200 ends of the same yarn good results are obtained by reeding 4 threads per dent. Over 5,200 ends should be reeded with 5 threads per dent. In the last named case the threads are crowded so closely in the dent that they are seen to separate of their own accord when released by the reed as the latter moves back and forth.

The filling yarn is also an important factor. The rougher and shaggier the filling yarn is the more likely is the reed to have an influence on the goods. Sometimes an intersecting twill will be more prominent in woolen goods with a carded woolen filling than with worsted yarn. A ply worsted yarn will always give a smoother face as far as the reed is concerned than will single yarn. When a shaggy filling thread is driven into place by the reed the fibres project from the face in the space in front of the wire. This forms a sort of shaggy line between each group of warp threads. If, however, the filling consists of smooth ply worsted yarn very few fibres project from the face and the effect of the reed on the cloth is much more easily removed by washing or fulling. The question is frequently asked why these goods made with worsted filling finish up smoother than when made with carded woolen filling. The principal reason has been explained in the preceding paragraph. It must be borne in mind

that woolen filling fulls more rapidly and there is consequently not so much time allowed for the warp threads to fill up the open spaces left by the reed wires. In this way stripes are caused giving the goods a ridgy appearance. If, on the other hand, the fulling process is not forced, particularly widthways, and the cloth is not woven too firmly causing the loose fibres to project from the face, a smooth face can be obtained even with carded woolen filling.

We come now to the 9-leaf corkscrew. Reeding with 3 threads per dent is best for this weave because 9 is divisible by 3. For closely set fabrics 4 threads per dent may be used providing the filling is fairly smooth

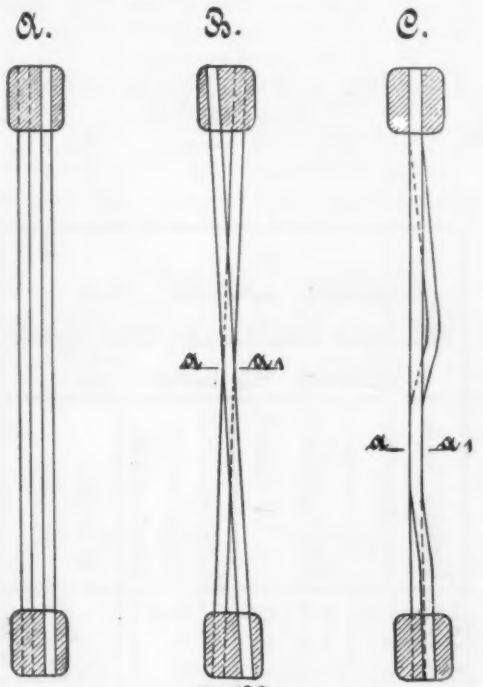



*Fig. 26.*

With 4 threads per dent the reed twill runs in the same direction as the weave twill. The weave twill covers 9 threads and the reed twill 36 threads. Wherever possible this weave should be used with 3 threads per dent. With 13-leaf corkscrew weaves and up to 4,500 ends of 2/36's worsted a reeding of 3 threads per dent is suitable. For 4,500 to 5,600 threads it is well to reed with 4 threads per dent. Very often the threads are reeded in groups of different sizes; thus for a 7-leaf twill 3 threads are drawn in one dent and 4 threads in the next. For a 9-leaf twill the order of reeding is 4 and 5 per dent. This method gives good results with fine worsted filling and fine wire in the reed.

For many years I have made experiments with reeds in which the wires were placed irregularly and obtained very good results. For example, when the warp is reeded with successively 3 and 4 threads per dent, the dent in which the 4 threads are drawn is made one-third wider than the other dent in which the 3 threads are drawn. Unfortunately these reeds are more expensive and can be used only for special purposes. In reeding warps with back threads the latter may be considered as additional to the face threads. If the proportion is 2 face to 1 back, 3 face to 1 back, etc., the back thread should be brought as near as possible in the middle of the group drawn in one dent because in this way the back thread is covered better.

There are many patterns which may be spoiled by an imperfect reeding of the warp; an example is shown at Fig. 25. This is an ordinary 4-leaf basket with the warp dressed 1 light, 1 dark. If reeded with 4 threads per dent the adjoining threads of different colors in the same dent will twist around each other and give the goods an irregular hit-or-miss effect. In open set fabrics this difficulty is easily remedied by reeding 2 threads per dent and having in each dent a thread from each square of the weave. In this way the two threads of different colors are kept apart. In closely set fabrics this method is not available, although, if the warp yarn is smooth and strong, 2 threads per dent can be used for fairly high sets. Frequently a reed with 30 dents per inch is thus used for fine worsted cloth.

Multiple row reeds, of which end sections are shown at A, B, C, Fig. 26, are frequently used, not only for coarse but for very fine goods. They are used for weaving low grade heavily weighted silk goods where the yarn is likely to chafe badly with the regular reed. The reed at A is made with two parallel rolls of wires. At B the wires are crossed in sawbuck fashion, and at C one row consists of

bent wires. The form at A gives good results when the filling is easily driven into place. Reed B gives a smoother face as the reed in driving the filling thread into place strikes at the point, a, a', where all the wires are in line. Reed C also gives a smooth fabric as it strikes the filling yarn at a a'.—(Translated by the Textile World Record.)

## COTTON GOODS IN URUGUAY.

The principal imports from Italy in dry goods are the cloths known as "tela florida," "listados," and "spigato," toweling and towels, linen, and cotton goods. It has been found that the "tela florida" and "listados" cloths can be made cheaper in Manchester; but the British article in this case has not the same durability, for the reason that with the better qualities of the Italian goods both the long and the cross threads are of equal strength, whereas, with the British article, although the cross thread is strong, the long thread is easily torn. Italian towels carry the market. Whereas formerly linen towels only were imported from Italy, recently these articles have been sent in cotton and mixed qualities, a sign that, a footing having been obtained in the former, the cheaper qualities can now afford to be sold. In recent years white cotton sheetings and shirtings from Italy have come into the local market, but can not be said to be making any real headway. That country's stock of cotton goods for men's clothing can compete with the British and German article, and are preferred in spite of the fact that they are more expensive. Principally, also, from Italy are imported the materials for netted cotton vests and underclothing generally, which are made into the various articles in this country.

## A CUBAN FIBRE.

The rope which is made from the bark of a native Cuban tree called mahagua, is exceedingly strong and durable, outlasting even hemp rope. This tree also produces a very beautiful native wood from which is also made some of the very finest of furniture.

The natives strip off this bark once or twice a year and while it is green and wet twist it into very strong cords or withes as well as rope. The withes are largely used to tie up the large and heavy bales of tobacco which are shipped out of here and the rope is used by the country people to tie and yoke up their oxen.

It comes mostly from the districts around Sagua le Grande, Baracoa and Gibara, at the eastern end of the island. Twelve yards of this curious rope sell for only 40 cents Spanish gold, while eight rolls of withes of this bark, which measure about fifty yards in each roll, are sold for $4 Spanish gold.

This is a novel and curious use to put the bark of a tree to and a tree also which is so useful as a wood for the very finest grades of cabinet work.—La Lucha, Havana.

## POWER REQUIRED FOR COTTON MACHINERY.

In the November issue we published two general replies to a question regarding the

Horse Power of Whitin Revolving Flat Card. Width of Lap 45."

| Weight 1yd. of Sliver. | Production in 10 hours. | Revolutions of Cylinder per. min. | Horse Power. |
|---|---|---|---|
| 36 grains | 80 lbs. | 165 | .84 |
| 38 " | 90 " | " | .90 |
| 40 " | 100 " | " | 1.00 |
| 46 " | 110 " | " | 1.06 |
| 48 " | 120 " | " | 1.12 |
| 52 " | 140 " | " | 1.19 |
| 56 " | 148 " | " | 1.24 |
| 60 " | 158 " | " | 1.30 |
| 64 " | 177 " | " | 1.37 |
| 68 " | 190 " | " | 1.40 |
| 72 " | 200 " | " | 1.45 |
| 76 " | 220 " | " | 1.53 |

TABLE I.

power required to drive cotton spinning machinery, and this month we are able to give our readers the results of a series of very careful tests, made at the Whitin Machine Works, Whitinsville, Mass., to determine the power consumed in driving cards and ring spinning frames on different kinds of work.

Tables 2 and 3 are the results of tests made in 1903 and 1904 at the Whitin Machine Works by O. L. Owen, M. E., assisted by N. S. Goodspeed, spinner, on two Whitin spinning frames, one of 256 spindles, 2 3/4-inch space, the other 240 spindles and 3-inch space. The frames were run under conditions that prevail in the average cotton mill.

## Horse Power of Whitin Ring Spinning. Filling Yarn.

| Number Yarn | Space of Frame. | Size of Spindle. | Diam of Ring. | Length of Traverse. | Twist per inch. | Revolution Front Roll per min. | Revolutions Spindle per min. | Revolutions Cylinder per min. | Number of Spindles per Horse Power. |
|---|---|---|---|---|---|---|---|---|---|
| 6 | 2 3/4" | Medium | 1 1/2" | 7 1/2" | 8.57 | 178 | 4800 | 662 | 142 |
| 8 | | | | | 9.90 | 175 | 5450 | 752 | 140 |
| 10 | | | | | 11.07 | 171 | 5950 | 821 | 125 |
| 12 | | | | 7" | 12.12 | 166 | 6350 | 876 | 122 |
| 14 | | | | | 13.10 | 162 | 6700 | 924 | 120 |
| 16 | | | | | 14.00 | 158 | 6950 | 959 | 116 |
| 18 | | | | | 14.85 | 154 | 7200 | 992 | 110 |
| 20 | | | | | 15.65 | 150 | 7400 | 1021 | 98 |
| 24 | | | | | 17.15 | 144 | 7800 | 1070 | 87 |
| 28 | | Standard | 1 3/8" | 6 1/2" | 17.99 | 140 | 7900 | 949 | 86 |
| 32 | | | | | 18.64 | 135 | 7900 | 949 | 88 |
| 36 | | | | | 19.50 | 129 | 7900 | 949 | 90 |
| 40 | | | 1 1/4" | 6" | 20.55 | 122 | 7900 | 949 | 90 |
| 45 | | | | | 21.80 | 115 | 7900 | 949 | 91 |
| 50 | | | | | 22.98 | 109 | 7900 | 949 | 93 |
| 60 | | | | 5 1/2" | 25.16 | 100 | 7900 | 949 | 97 |
| 70 | | | | | 26.75 | 92 | 7800 | 936 | 100 |
| 80 | | | | | 28.16 | 87 | 7700 | 924 | 104 |
| 90 | | | | | 29.39 | 80 | 7400 | 888 | 110 |
| 100 | | | | | 30.50 | 75 | 7200 | 864 | 117 |
| 110 | | | | | 31.44 | 70 | 6900 | 830 | 132 |

TABLE 2.

Table No. 1 gives the result of tests made in 1903 at the Whitin Machine Works by O. L. Owen, M. E., assisted by Frederick Rayner, carder, on a Whitin revolving flat card with a 45-inch lap. The table shows that the power required is governed by the production. The card was run under ordinary mill conditions as to temperature and humidity. Tests were made with a Webber dynamometer.

The average temperature of the room was 76 degrees; average humidity 50 per cent.; band pull 2 pounds; bands 120 to the pound; size of travelers as stated in table 4. Observations were made on both empty and full bobbins, the average of which showed the power required to drive the average bobbin on each number of yarn tested. These averages are stated in the column of "number of spindles per horse power." The tests were made

## Horse Power of Whitin Ring Spinning.

### Warp Yarn.

| Number Yarn | Space of Frame. | Size of Spindle. | Diam. of Ring. | Length of Traverse. | Twist per inch. | Revolutions Front Roll per min. | Revolutions Spindle per min. | Revolutions Cylinder per min. | Number of Spindles per Horse Power |
|---|---|---|---|---|---|---|---|---|---|
| 6 | 3" | Large | 2" | 7¼" | 11.63 | 161 | 5900 | 814 | 85 |
| 8 | | | | | 13.43 | 158 | 6700 | 920 | 74 |
| 10 | | | | | 15.02 | 154 | 7250 | 1000 | 68 |
| 12 | | Medium | | 7" | 16.45 | 150 | 7750 | 1069 | 76 |
| 14 | | | | | 17.77 | 146 | 8100 | 1124 | 72 |
| 16 | | | | | 19.00 | 141 | 8450 | 1166 | 70 |
| 18 | | | | | 20.15 | 138 | 8750 | 1207 | 72 |
| 20 | | | | | 21.24 | 134 | 8950 | 1280 | 74 |
| 24 | | | | 6½" | 23.27 | 125 | 9200 | 1280 | 76 |
| 28 | 2¾" | Standard | 1⅝" | | 25.13 | 120 | 9500 | 1140 | 76 |
| 32 | | | | | 26.87 | 114 | 9500 | 1140 | 78 |
| 36 | | | | | 28.50 | 108 | 9700 | 1164 | 78 |
| 40 | | | 1⅝" | 6" | 29.07 | 106 | 9700 | 1164 | 80 |
| 45 | | | 1½" | | 30.82 | 100 | 9700 | 1164 | 83 |
| 50 | | | | | 32.52 | 94 | 9700 | 1164 | 86 |
| 60 | | | | | 34.83 | 86 | 9500 | 1140 | 90 |
| 70 | | | | | 37.62 | 80 | 9500 | 1140 | 94 |
| 80 | | | | | 39.33 | 76 | 9300 | 1130 | 100 |
| 90 | | | 1⅜" | 5½" | 40.76 | 72 | 9100 | 1090 | 108 |
| 100 | | | | | 42.00 | 66 | 8700 | 1044 | 114 |
| 110 | | | | | 44.00 | 64 | 8500 | 1020 | 127 |

TABLE 3.

Emerson power scale, Huddleston's hygrometer with the Emerson power scale, Huddleston's hygrometer and Taylor Bros.' thermometer.

Table 4 is the traveler table and shows the result of tests conducted by O. L. Owen, and assisted by D. S. Goodspeed at the Whitin Machine Works from Nov. 18, 1903, to April 1, 1904. Sizes of travelers will vary from the above table according to variations in speed, quality of cotton, etc., but the table may serve as a basis for selection. The higher the speed the lighter the traveler and vice versa, varying in proportion of one or two grades of travelers to each 1,000 revolutions of spindle. Without separators a few grades heavier traveler would be required.

In 1902 the United States produced 1,250,000 pounds of mohair. It is grown principally in Oregon, California and Texas, the goats having been originally imported from Turkey.

In the year 1844 John Mercer discovered the effect of strong solutions of caustic alkalies on cotton, but it was only within the last decade that the mercerizing process attained any degree of commercial success.

The actual chemical process of mercerizing is the same today as when Mercer took out his patent in 1850; the process of mercerizing under tension was patented by Arthur Lowe in 1890.

| Warp Yarn. | | | | | Filling Yarn. | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Number of Yarn. | Revolutions of Spindles | Diameter of Ring. | Number of Traveller. | Weight of 10 Travellers in grains. | Number of Yarn. | Revolutions of Spindles | Diameter of Ring. | Number of Traveller. | Weight of 10 Travellers in grains. |
| 4 | 4950 | 2" | 14 | 39 | 4 | 4000 | 1½" | 16 | 44 |
| 6 | 5900 | | 12 | 33 | 6 | 4800 | | 13 | 36 |
| 8 | 6700 | | 9 | 23 | 8 | 5450 | | 10 | 26 |
| 10 | 7250 | | 8 | 20 | 10 | 5950 | | 8 | 20 |
| 11 | 7500 | | 7 | 18 | 11 | 6150 | | 7 | 18 |
| 12 | 7750 | | 6 | 16 | 12 | 6350 | | 6 | 16 |
| 13 | 7950 | | 6 | 16 | 13 | 6500 | | 5 | 14 |
| 14 | 8100 | | 5 | 14 | 14 | 6700 | | 4 | 13 |
| 15 | 8300 | | 4 | 13 | 15 | 6850 | | 3 | 12 |
| 16 | 8450 | | 3 | 12 | 16 | 6950 | | 2 | 11 |
| 17 | 8600 | | 2 | 11 | 17 | 7100 | | 1 | 10 |
| 18 | 8750 | | 1 | 10 | 18 | 7200 | | 1-0 | 9 |
| 19 | 8850 | | 1-0 | 9 | 19 | 7300 | | 3-0 | 8 |
| 20 | 8900 | | 2-0 | 8½ | 20 | 7400 | | 5-0 | 7 |
| 21 | 9050 | | 3-0 | 8 | 21 | 7500 | | 5-0 | |
| 22 | 9100 | | 4-0 | 7½ | 22 | 7600 | | 6-0 | 6½ |
| 23 | 9150 | | 5-0 | 7 | 23 | 7700 | | 6-0 | |
| 24 | 9200 | | 6-0 | 6½ | 24 | 7800 | | 7-0 | 6 |
| 28 | 9500 | 1¾" | 7-0 | 6 | 28 | 7900 | 1⅜" | 8-0 | 5½ |
| 32 | 9500 | | 8-0 | 5½ | 32 | 7900 | | 9-0 | 5 |
| 34 | 9600 | | 9-0 | 5 | 34 | 7900 | | 10-0 | 4½ |
| 36 | 9700 | | 10-0 | 4½ | 36 | 7900 | | 11-0 | 4 |
| 38 | 9800 | | 11-0 | 4 | 38 | 7900 | | 12-0 | 3¾ |
| 40 | 9700 | 1⅝" | 12-0 | 3¾ | 40 | 7900 | 1¼" | 13-0 | 3½ |
| 45 | 9700 | 1½" | 13-0 | 3½ | 45 | 7900 | | 14-0 | 3¼ |
| 50 | 9700 | | 14-0 | 3¼ | 50 | 7900 | | 15-0 | 3 |
| 55 | 9600 | | 14-0 | | 55 | 7900 | | 15-0 | |
| 60 | 9600 | | 15-0 | 3 | 60 | 7900 | | 16-0 | 2¾ |
| 65 | 9600 | | 15-0 | | 65 | 7800 | | 16-0 | |
| 70 | 9500 | | 16-0 | 2¾ | 70 | 7800 | | 17-0 | 2½ |
| 75 | 9500 | | 16-0 | | 75 | 7800 | | 17-0 | |
| 80 | 9300 | | 17-0 | 2½ | 80 | 7700 | | 18-0 | 2¼ |
| 85 | 9100 | | 17-0 | | 85 | 7600 | | 18-0 | |
| 90 | 9100 | 1⅜" | 18-0 | 2¼ | 90 | 7400 | | 19-0 | 2 |
| 95 | 9000 | | 19-0 | 2 | 95 | 7400 | | 20-0 | 1¾ |
| 100 | 8700 | | 20-0 | 1¾ | 100 | 7200 | | 21-0 | 1½ |
| 110 | 8500 | | 21-0 | 1½ | 110 | 6900 | | 22-0 | 1¼ |

FIG. 4.—TRAVELER TABLE.

## BRADFORD DRESS GOODS FOR AMERICA.

*(Specially Written for Textile World Record.)*

Nothing strikes a man more who is at all conversant with the import textile trade than the large lines of Bradford made dress goods which pour into the United States markets, and looking over the other day a big bunch of fabrics which were already cased for dispatch to New York, I clipped a few patterns which are worthy of being looked at by United States manufacturers. Bradford makers of dress goods would have been this last twelve months terribly quiet but for the large lines which are weekly shipped across the Atlantic, and today the principal support for Worstedopolis dress looms is on American account. It will therefore be very interesting and helpful if we look at a few cloths which are being shipped for present consumption by the American public.

First and foremost we have what is known as lustres, and it is surprising how these are figuring today in the list of Bradford shipments of dress goods. This class of fabric is far from being a popular one on this side the Atlantic, but in plain mohairs there is being done a very respectable quantity with American importers. How the fabrics are made at the price is indeed a problem, but the fact, nevertheless, remains that these are regular lines, and not "jobs" at half the cost. I ran through the bunch and saw a good many lustre fabrics, and just as showing the wide range of fabrics which are being shipped, I direct attention to the following table, all of which represents leading lines of lustres:

| Width, Inches. | Weight, Ounces. | Price, Cents. |
|---|---|---|
| 43 | 2.95 | 11½ |
| 45 | 3.5 | 24¼ |
| 45 | 3.30 | 26 |
| 45 | 3.70 | 17¾ |
| 44 | 3.40 | 13 |
| 44 | 3.60 | 13¾ |
| 45 | 3.36 | 22 |

All the above represent plain black lustre dress goods, the difference in price indicating a slight change in quality, just sufficient to show some change to the ultimate consumer.

The 43-inch cloth at 11 1/2 cents is a marvel of cheapness, showing that Bradford can produce something "cheap" after all. A cotton warp, of course, is used, and a worsted weft employed, but while there is not that sheen about the fabric that perhaps is usually looked for in lustres, still the way it has been finished is suggestive to American manufacturers. All the patterns I write about are to be seen at the Boston office of this issue, and they are worth being inspected. They are cut close and finished smartly.

The best black lustre in the whole bunch

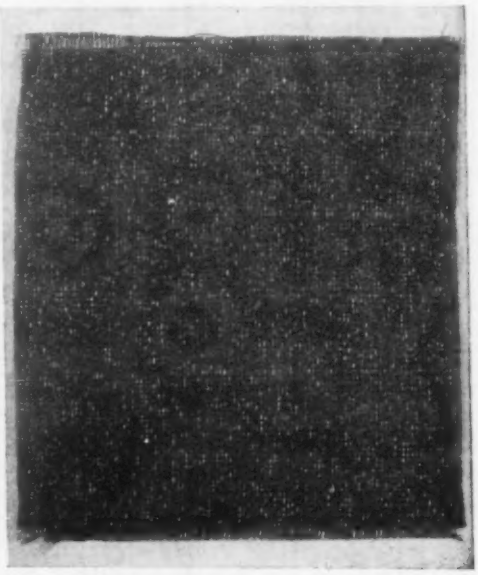


FIG. 1.

is the one at 26c., and, of course, this is a far superior thing to the previous cloth. Better in quality, more closely woven, and smartly finished, there is much to attract and fascinate.

Fig. 1 shows a sample which has been very extensively shipped to America, and while still partaking of the nature of a lustre, it suggests to American manufacturers the benefits and possibilities wrapped up in the printing machine. This dress fabric is very bad to set forth in words. A cotton warp is used, but the threads are all printed in several shades. A very dark gray worsted thread is used for the weft, and for a dark

gray dress this is just the ticket. Obtainable here at 16c. per yard, 42 in., 3 oz., and presenting a combination of colors almost as multitudinous as the rainbow, the fabric appeals to the majority as being smart, while not one in a hundred would ever suspect that the colors have been got by printing. The fact of the matter is, I never suspected this for a moment until I came to analyze

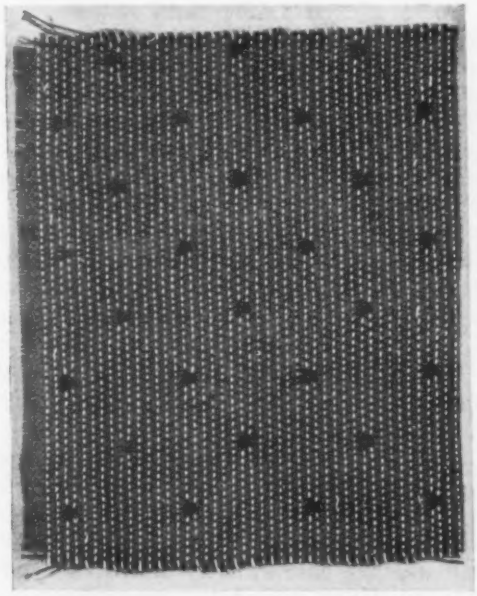


FIG. 2.

the fabric for this issue. It is made in several shades, but I only send one forward for inspection. I have never seen such an ingenious cloth as the one just outlined.

At Fig. 2 we have an absolute change, and a cloth that will be worn by the millions of either England or America. This is essentially a lustre cloth, but altogether lighter in shade, and with more design. A drab cotton warp is used, with white or rather cream mohair weft. For summer wear it is just the thing, and will always look clean and smart. The reader will see that it is after the order of the spot effect which has been so fashionable for the last few seasons. The plan arrangement seems to cause both the warp and weft to alternate in producing the spot, an arrangement serving a good purpose in relieving the monotony seen when either weft or warp appears on the surface by itself. It is 46 in. wide, 3.4 ozs. per square yard, 23 1/2 cents.

Our last pattern at Fig. 3 is a very attractive one, being 54 inches wide, 4.2 ounces per square yard, 31 1/2c. per yard. Here, again, we have the spot principle in vogue, and being made in black and white effect, a nice salable fabric is seen. The warp arrangement is four ends black cotton and two ends white cotton, the weft all being a dark gray mixture mohair. The cloth is on the quiet side, but is a seller to the million. Any manufacturer interested in dress fabrics cannot do better than spend half an hour in examining all the above fabrics, for they are fabrics which are being shipped this very week.

If American manufacturers have studied lately the list of Bradford exports to America,

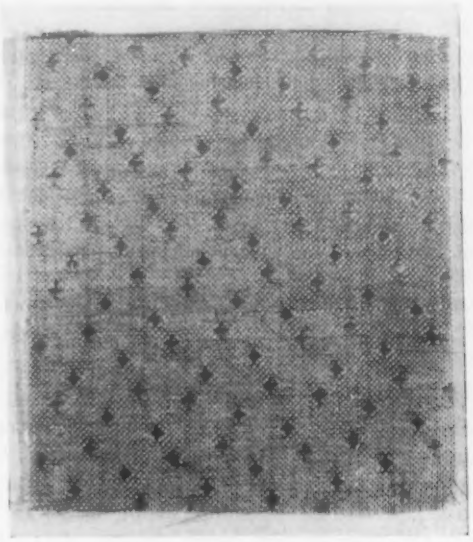


FIG. 3.

they must have been struck with the continuance of dress goods in the list, and for next spring delivery some fairly decent lines have already been booked. There continues to be also a big shipment of wool, most of which will produce some good lines of dress goods, and it seems to me that American designers cannot do better than imitate Brad-

ford lines both in design and finish. I need hardly point out the great strides which Bradford finishers have made this last five years in finishing dress fabrics, and today it is plain that price per yard, good taste in design, more attention to color blending, and better finishing are the essentials of success with Bradford dress goods manufacturers.

[For the information of those who are not in a position to inspect the English samples at our Boston office, we have analyzed two of the lustre fabrics, with the following results:

No. 388 43 inches wide, 11 1/2 cents.
Warp, 65 threads per inch, 1/46s cotton.
Filling, 59 threads per inch, 1/28s lustre worsted.
Weight, 3.17 ounces per square yard, 3.77 ounces per yard 43 inches wide.
The sample contains 10 per cent. of weighting material.

No. 389, 45 incnes wide, 26 cents.
Warp, 62 threads per inch, 1/44s cotton.
Filling, 66 threads per inch, 1/29s lustre worsted.
Weight, 3.3 ounces per square yard, 4.13 ounces per yard 45 inches wide.

These sizes are as found in the finished goods, without allowances for changes in the spun size due to take-up, weighting, loss in finishing, etc.—Ed.]

## HOW TO PUT ON DOFFER RINGS.

*BY SAM DRIVER.*

Carders have different opinions as to the width of rings and the numbers of wire. Some object to the waste end of the ring being wide; by having the ring wide it saves waste and a deal of trouble from the outside ends of the spools being lumpy, fine or coarse. Some will say: How can a wide waste ring save waste? It will save waste by allowing the traveler to be set so that the loops in drawing will not come to the extreme edge of the cylinder, thereby saving the stock from dropping down on the ends of the leader-in and also reduce the flyings on the sides of the cards, thus keeping the card cleaner. The waste and rings should be at least 1 1/2 inches wide.

Every carder knows the annoyance and trouble from the outside ends on spools. If on some lots the outside ends are heavy on the spools from some cause, move the waste end ring inward; if it is too fine, move it outward. This will make the outside strand on the spools coarser or finer.

Putting on rings requires care and accuracy; they must be true, or uneven roping will be the result.

For a 48-inch finisher with Apperly feed taking off 48 good strands, on the top doffer there should be 24 rings 14/16 wide and one waste end ring 1 1/2 wide, 35 steel wire; on the bottom doffer, 24 rings 1 inch wide and one spare end ring 1 1/2 inches wide, 35 steel wire, making 48 inches of wire covering the cylinder wire.

Before putting on the rings clean the doffer well and fill up the blow holes, if any, with plaster of Paris; this is better than lead or putty as it does not corrode when the oil strikes it and start a bunch under the ring. Oil the surface of the doffer slightly with sweet oil before putting on the rings; they will slide down easier.

Have a cone shaped pulley made from a two-inch board with the base the exact diameter as the doffer, and the point 3/4 inch smaller than the base. Put this on the doffer shaft with the base squarely against the end of the doffer. This pulley should be shellacked and made perfectly smooth. Have a board 1 1/4 inches thick and 14 inches square with strips of wood screwed on the ends to keep it from splitting. Cut a hole through the centre a trifle larger than the doffer. Before putting on the rings examine every one to see if the wire is all right on the back. Then put a ring over the cone pulley and on the doffer; then with the drawing board slide the ring down to its place.

After getting on the rings we want a ring board made as follows: Get a piece of wood 72 inches long, 1 1/2 inches thick and 4 inches wide, planed to a straight edge. To mark it off, place it on doffer bearing arms, get a try-square, and with a sharp pen-knife mark off the exact width of the cylinder on the board. Then make another mark 1/2 inch wide inside the outer marks; we will then have the width of the wire on the cylinder,

which is 48 inches. Now take the dividers and space off 1 1/2 inches on each end; this is for the waste end rings. Now take the dividers and divide the intervening space into 48 equal parts for the 48 rings.

Next place the top doffer in the grinder frame with the points of the teeth toward you. The reason for this is that if the tool you are moving them with should happen to slip it would only knock the wire back, which could be easily brought into place again; another reason is that the rings are then in front of you as if you were standing in front of a finisher.

Place the ring board in front and about opposite the centre of the doffer; set the outside marks on the board on a line with the outside edge of the doffer; set the board as close to the rings as possible; see that the collar on the doffer shaft and all the bearings are tight. The doffer and the board are set level, and we are now ready to slide the rings into place. Get a piece of flat iron 3/4 inch wide, 1/4 inch thick, 15 inches long; the point should be concave and smooth; a wide screw driver does very well.

All being ready, start up the doffer and commence on the outside waste ring first. Before putting on the packing between the rings place both doffers together and see if the rings come opposite the spaces; it is very important they should, otherwise the roping will not be even. In putting the packing between the rings some carders cut narrow pieces of filleting the right width and length and then cut a hole in each end and tie them on; some shave each end and tack or glue them on. The best and quickest way is to put a crank on the doffer shaft and wind small bundle twine in between just as high as the leather on each ring. Great care must be taken not to wind too tight or it may cause the ring to move. Cut the next packing to go between the ring wire, just the right width; it is better to cut them too narrow than too wide. If they are too wide they will crush in the edge of the wire on the ring, causing uneven roping. Some carders tack them on, others glue them, cutting each end beveling. It is a good plan to fill the spaces to within 1/8 inch from the top of the wire; this keeps the stock from collecting on the edge of the rings; it also keeps the strippers from knocking down the wire when stripping. If the rings are put on right and there is uneven roping you know it is not the fault of the rings.

When ready, place the grinders on very lightly, don't try to hurry them, give them time, humor them some, they are sometimes very contrary. When done grinding take off the emery cylinder and strickle each one separately for half an hour, vibrating very briskly from end to end.

When grinding use plenty of wool oil on the emery; by using oil on the emery the points of wire will be much smoother than with the emery dry. Judgment must be used to decide when ground enough. When using the emery strickle, let it have its own weight on the wire. When ready to smooth and finish, take a new hand card or a good old one and fill it with drawing, changing it as often as it gets dirty, vibrating it very briskly for an hour or more on each doffer. Don't be afraid of brushing them too long, the longer they are brushed the smoother they will be. This cleans out all the oil and emery dust and polishes the points of wire. If the rings are finished in this way the stock will never run back over them, which today is a great annoyance to most carders.

To gauge the top and bottom doffers when in the board, get a piece of 1-inch board, 15 inches long and 1 inch wider than the distance between the top and bottom doffer, and beveled on both edges. Mark the board off in spaces the same as the ring board and place in between the doffers when setting. This plan is far better than to use the plumb-bob and more accurate.

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The silk industry appears to have had its origin in China, and historically it dates back 2700 years B. C.

American grown mohair is worth only about two-thirds as much as the foreign product on account of the large amount of kemp it contains. Foreign mohair can be spun to as high a count as 60s, while the finest grades of domestic staple can be spun only to 40s.

## ENGLISH NOTES.

*(By our Special Correspondent.)*

Sales of cloth scarcely justify it, but tops harden, and holders grow more hopeful. Super 60s for delivery in early 1905 are as dear as prompts; which is to say that they have moved up one farthing to 24 pence. There is a good prospect of another farthing on the price of 40s, making them 14 1/2 pence soon. English wools of good white and deep classes are making 11 1/4 pence readily for hoggs and wethers and country dealers stand very firm. The truth appears to be that the bulls feel themselves able to weather the year out and are counting on the customary improvement in consumption which follows New Year. The conjunction of firmer wool and easier cotton favors the utilization of cotton for warps for "cotton worsteds." South American markets are again indenting for the latter and for cheap crossbred suitings. This, with the demand for coarse woolens for the East, make up the features of greatest strength in the cloth department. For the rest, a great amount of work is being done for no perceptible profit and the same is true of the hosiery field.

The efforts of Bradford makers of dress goods to defeat the French in Amazon cloths from mule-spun, dry-combed material have met with only qualified success. The best attempts have improved on the French standard of purity and durability, but when appearance and that only is the desideratum, Bradford is beaten. There is ground for the presumption that Bradford could, if she would, draw level with Roubaix, by making adequate preparation in plant. But the firms in the best position to lay in mules and patent combs and French looms are so well off as things are as to see no desirability in so sweeping a change. Those who would like most to try the experiment are the ones generally who can least afford to throw away the plant they have. In these circumstances, sober men are reflecting that Roubaix also has its bad times, and that those are the periods in which makers of bright goods do best. Still, the knowledge remains that plain French stuffs command a certain sale in all seasons and that simple truth constitutes a temptation.

Previous notes have spoken of the effect of the eastern war upon Yorkshire woolen trade. At length Japan has sent in haste for nearly 200,000 yards of Scotch cheviots in blues and tweeds. Russia is supplying herself from internal mills and is not doing so very well from all one hears. M. Marazoff, a rich woolen manufacturer in Moscow, gave a million roubles' worth of cloth free for the use of the army in Manchuria. His disgust may be pictured on finding his patriotic gift turned to private account. Some, at least, of the goods were openly for sale in Moscow shops.

Apart from this is another item of joint interest to governments and textile men. The Russian wounds have been considerably aggravated in severity since the thick winter overcoats were served out. More cloth has been carried into the tissues of the body. The circumstance is one for the notice of heads of humane War Departments and for tne recognition of their contractors.

Advices from Lodz in Russian Poland to our Foreign Office state that one firm has an army order for 12 million yards of cotton cloth; another for 1 million pairs of woolen mitts with thumb and trigger finger. A third firm is busy with an order for half a million woolen shirts. In other districts woolen and worsted mills are quite out of work. Jute mills, on the other hand, are working all round the clock. One has means further of knowing that the financial position is utterly rotten. Bankruptcy stalks abroad like a plague and money for grain or wool is thrice welcome.

In middle-class trade an excellent variety of so-called worsted trouserings are on the market. Neither in design nor appearance are these notably inferior to the finest and most expensive makes. There is nothing visible to inform the wearer that his trousers are not of solid worsted. The warp is sound 32s or 40s and alternate picks of the filling are the same. But the bulk of the weft is pretty coarse angola black. The substitution is not all loss, for these mixed worsteds are less ready to wear shiny. They are bulkier and warmer than the genuine article and

they hang well in use. Except that their life is shorter the cheap article is as good as the dearer. In round 20-ounce weights there is close competition at about one dollar a yard and at this price the styles and workmanship are really creditable. The stuff is turned out extensively by firms accustomed to better goods as well as by second-rank manufacturers and it should be fair game for any American with good looms and good finishing facilities.

The overcheck in tweeds and worsteds is still supreme. In the cheaper goods designers have not shrunk from making the red and green skeleton checking somewhat unpleasantly conspicuous by its colors and the size of the yarn, or by duplicating colored threads. A common combination is to employ both red and green checks over a foundation of black or brown and white. Curiously enough, the overchecking for overcoats has been done rather more quietly than for suitings. Neatness has been the characteristic of most overcoatings. At their worst in taste the checks have been the "patriotic" red, white and blue, and these have not been unpopular in cheap cloths.

It has been pointed out in a State paper that in 1872 China's consumption of imported cottons was 94 per cent. in cloth and 6 per cent. yarn. In 1882 yarn formed 42 per cent. of the gross total, and in 1903, despite the energy of Chinese mills, yarn worth 44 million dollars, or 52 per cent. of the whole import was yarn. The losers by this are Lancashire and the United States. Japan is "butting in" by force of protracted credit terms and assiduous traveling in the interior of the Empire.

The organization of a large mill producing plain and fancy knitting and fingering yarns is a somewhat complex matter. The best firms on this side simplify things by keeping very large stocks of rovings in all colors upon bobbins. This is the case with the old and well-known concern of J. & J. Baldwin, Halifax, the spinners of "Beehive" brand. A whole story, as large as any room in the mill, is given over to the storage of rovings which can be spun and twisted on the briefest delay. The firm claims to be the largest of its kind in the merino trade. Its raw materials are chiefly fine Botany and Sussex Downs wools and its principal manufactures are yarns for retail sale. Nothing but hand-dyeing is thought to give results good enough, and the white yarns produced are remarkable for the amount of washing they receive; three times in the wool, twice after carding, once in the back-washing apparatus after combing and again in the skein seems in all conscience sufficient. The yarn is far, however, from being spoilt by the treatment, for it fetches the best prices and has been sold here since 1785.

Users of English spun silks should be apprised of further changes in the market. The production is diminishing somewhat and is centering in fewer hands. Another firm, J. W. Armitage & Sons of Brighouse, employing about 100 hands, has gone into voluntary liquidation. The business of Barkers & Buttersworth and R. Kershaw & Co. were absorbed some while ago by Ormerod Bros. and the reconstructed concern, well known in America, of Jno. Hadwen & Sons, Ltd., has been burned out.

More than one other spun-waste mill is in a bad way and after a further shake-out there is some chance of forming a combine. Opinion is favorable, particularly to a price committee, which should fix prices for eastern waste no less than for spun yarns. The time for this cartel has not yet arrived, but it seems reasonable to suppose that the market will become firmer as time passes. Meantime, the constant increase in the United States import of schappe yarn, concurrent with the dwindling in English spuns, is not forgotten.

The opening of the subscription list for 375,000 shares of one pound each is the latest step of the British Cotton Growing Association. The money, of course, is to be laid out in loans or gifts to growers in India, East and West Africa and British Guiana. Funds are being found by every class of people in any way associated with Lancashire prosperity. There is no thought of dividends or other direct returns within any measurable space of time. The contributions are in the nature of payments to a benevolent fund, and whatever one's opinion as to the wisdom of fleeing to pastures new, it is hard to withhold admiration from the faith and solidarity of the subscribers. These include cotton-masters and operatives, merchants, dyers, railway companies, banks, shopkeepers, machinists, accountants, insurance companies and a hundred miscellaneous types.

# Questions and Answers.

**Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.**

**For reply to questions that are not of general interest to readers of textile journals, such as those relating to the composition of yarns, analysis of fabrics, etc., we will charge the enquirer with the cost of the investigation.**

## Colors for Blanket Borders.

*Editor Textile World Record:*

Can you give me any information regarding the best dyes to use for blanket borders which will withstand bleaching. Lacy (494.)

The answer to this question will be found in an article in the dye department of this issue.

## Australian Mills.

*Editor Textile World Record:*

Please tell me if there are any knitting mills or collar factories in Australia. Emerald (488.)

Inquiries among our Australian correspondents elicit the reply that there are neither knitting mills nor collar factories in that country.

## Billiard Cloth.

*Editor Textile World Record:*

We desire to purchase billiard cloth and would like to know the address of some mill manufacturing it. Pool Table (490).

If any of our readers are interested in this inquiry they can communicate with Pool Table through this office.

## Mildew.

*Editor Textile World Record:*

What material can be added to size to prevent mildew in the cloth? Dixie (491).

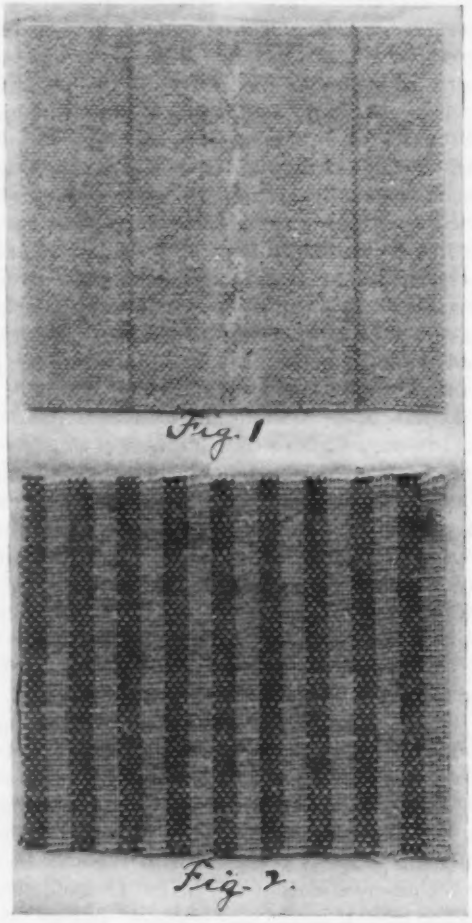
There is no disinfectant that will stop mildew in the cloth. When size is made of fermented starch it is a good plan to put in a disinfectant, but this will have no after effect on the cloth. Mildew will more readily form on cloth where the size has not been boiled into the yarn. Starch is a vegetable product and if there is much left on the yarn and the cloth is placed where it is damp, mildew spots will show up all over the cloth.

Thomas Barr.

## Finishing Cotton Flannels.

*Editor Textile World Record:*

I am a finisher in a cotton mill, and have been trying to match a competitor's fabric, a napped cotton flannel, but in spite of all I can do, have failed. Our finishing room, like the rest of the mill, is equipped with the best machinery, but for some reason we fail to make as good a napped flannel as our competitor turns out. I enclose a sample of the competing flannel, Fig. 1, also a sample of our goods, Fig. 2. Can you tell me what is the cause of the difference, and how I can get No. 1 finish on our goods? My position here depends on whether I match No. 1 or not. Al Sirat (483).




The reason for the difference in finish between these two samples became evident the moment we took them in hand. Al Sirat's cloth is sleazy, much lighter and more open than the cloth he is trying to match. His employers are asking him to do the impossible. Unless two fabrics are alike when they

come from the loom they cannot be finished to look and handle the same.

While an examination and handling of the two cloths showed plainly the cause of Al Sirat's trouble, we have analyzed them in order to demonstrate beyond a doubt that our judgment is correct. The results of the analyses are as follows

Competing Cloth, Fig. 1:

Weight 3.6 ozs. per yd., 27 in. 4 4/9 yds, per pound.
Warp, 57 threads 1/22 cotton per in. 1.3 ozs. per yard.
Filling, 44 threads 1/10 cotton per in., 2.3 ozs. per yard.

Finisher's Cloth, Fig. 2:

Weight, 2 2/3 ozs. per yd., 27 in., 3 yds. per pound.
Warp, 44 threads 1/20 cotton per in., 1.13 ozs. per yard.
Filling, 34 threads 1/11 cotton per in., 1.54 ozs. per yard.

A comparison of the two layouts shows plainly how much better is the foundation for a napped finish in the first fabric than in the second. The thickness of the nap depends upon the body of the cloth. In No. 1 there are 3.6 ounces of stock per yard, while in No. 2 there are but 2 2/3 ounces per yard, or over 25 per cent. less. Moreover, the competing fabric, Fig. 1, has a larger proportion of filling, from which the nap is raised. The proportion of filling is 64 per cent. in No. 1, compared with only 58 per cent. in No. 2.

Besides these faults No. 2 is set much coarser. No. 1 has 57 warp threads per inch, as compared with only 44 threads in No. 2. No. 1 has 44 filling threads per inch, while No. 2 has but 34. Thus not only is the quantity of stock per yard much larger in No. 1, but it is woven much closer, enabling the finisher to give the goods more work on the napper and raise a thicker and better nap.

No. 2 cloth is inferior in every respect and it is impossible to make it look and handle like No. 1. Goods well made are half finished. If poorly made they can not be finished right. Al Sirat's case is by no means rare. The manufacturer lays out the cloth with the cost per yard only in mind. Ends and picks are reduced, the fabric is not planned to suit the finish and the result is that the goods are left unsold, while some shrewder and abler manufacturer makes his cloth right and sells his mill out of sight. No. 1 cloth is today sold in every town in the United States, while such fabrics as No. 2 go begging.

Al Sirat's difficulty also shows how important it is that every overseer who may in any way be held responsible for the condition of the finished product should be able to analyze fabrics and determine for himself how they have been made. Many an overseer has lost his position or reputation for good work because he was trying to accomplish the impossible at the direction of his employer. While in rare cases the high quality of a mill's product may be due to special machinery and secret processes, in nearly every case it is due to a judicious selection of stock, good work in each department, and the right construction of the fabric; all designed to produce the goods wanted by the trade. When the finished goods are inferior to a competitor's product the cause, as in Al Sirat's case, can nearly always be determined by analyzing the two fabrics.

## Moisture in Silk.

*Editor Textile World Record:*

What is meant by the statement that the standard of moisture for silk is 11 per cent.?

Tsatlee (492).

Silk absorbs moisture very readily, and will hold 30 per cent. of water without feeling damp. This makes it necessary to have some standard of moisture for the sale and manufacture of silk. It has been found that under ordinary climatic conditions about 10 per cent. of the weight of silk consists of water, and the silk trade has adopted as a standard a regain of 11 per cent. of the absolutely dry weight. The silk is dried and 11 per cent. is added to the weight; this is called the conditioned weight. As the 11 per cent. is based on dry weight, there are 11 lbs. of water for 100 lbs. of dry silk. This 11 lbs. is equal to 9 9/10 per cent. of the total or conditioned weight, 111 lbs. Silk as found in commerce contains ordinarily about 1 1/2 per cent. more than the standard degree of moisture. The Lyons Conditioning House reports that the 104,555 tests made at that institution in 1903 showed losses from the commercial to the conditioned weight varying from 1.04 per cent. in September to 1.57 per cent. in November. Jules Persoz, in his work entitled "Le Conditionnement de la Soie," gives the following table showing the percentage of regain based on dry weight under different degrees of heat and moisture in the atmosphere.

| Temperature. | Hygrometer. | Regain—Raw. | Regain—Boiled off. |
|---|---|---|---|
| 71½° F..... | 53°..... | 8.90%..... | 7.45% |
| 71½° F..... | 54°..... | 9.04%..... | 7.48% |
| 71½° F..... | 55°..... | 9.45%..... | 7.97% |
| 71½° F..... | 60°..... | 9.81%..... | 8.36% |
| 59 ° F..... | 59°..... | 10 19%..... | 8.54% |
| 71½° F..... | 67°..... | 10.47%..... | 8.65% |
| 68 ° F..... | 66°..... | 10.79%..... | 9.20% |
| 50 ° F..... | 67°..... | 11.52%..... | 9.72% |
| 55½° F..... | 76°..... | 12.09%..... | 10.37% |
| 52 ° F..... | 79°..... | 12.63%..... | 10.96% |
| 59 ° F..... | 84°..... | 12.83%..... | 11.61% |
| 50 ° F..... | 84°..... | 13.08%..... | 12.17% |
| 50 ° F..... | 87°..... | 13.14%..... | 12.29% |

# KNITTING DEPARTMENT.

**For Knitting Mill Machinery, Equipment and Supplies, see pages 232 to 253. Also Buyers' Index.**

## KNIT GOODS SITUATION.

The conditions in the knit underwear end are becoming more settled each day, and with election over, there is reason to anticipate a season of prosperity, and knit underwear people are looking forward to their share of it. As the holiday season approaches, advance business for spring with the jobbers usually drops off some, and this season is no exception.

It is believed that there has not been as much business taken so far as in some former years, yet it is confidently expected that there will be no difficulty in getting it after January first. Reports from a number of traveling men state that there are a great many of their customers who will be ready to place their orders then, but who do not care to take the time before the holidays.

The principal topic of conversation and interest is the fall season of 1905 and manufacturers are now out soliciting business from the jobbers, and while it is yet a little early to give many ideas as to what is being booked, the indications are that the jobbers will place their orders early and in good volume. As far as can be learned, prices being asked on cotton goods are somewhat lower than last year, ranging all the way from 2 1/2 to 7 1/2 per cent.

Jobbers have been very conservative in their purchases during the latter part of the season just past and as a consequence, have no large stocks on hand and it will be necessary to place fairly liberal orders for 1905 and the chances are that the prices will not fall below the opening figures.

Spinner's prices on yarns do not indicate any weakness, but rather there is a tendency upward and some manufacturers have been obliged to buy yarns at figures that they had no idea of paying early in the season. A more independent spirit is exhibited by manufacturers now than in former years which will rebound to the benefit of both the buyer and seller.

An instance of advancing prices has already taken place in the case of a manufacturer who has been showing men's fleeced garments weighing 12 1/2 pounds on size 42 at $3.25, but who has now advanced his quotation to $3.32 1/2. There are still a number of men's fleeced lines in the market at $3.25, and one manufacturer quotes a weight of 13 pounds on size 42 at this price.

The low grade ladies' ribbed garment that reaches the retail for a 25c. article is being shown in a 7-pound weight and practically all manufacturers making this class of merchandise are asking $2.00 for it. Some of them show 7 1/2 pound goods at $2.10 and one prominent manufacturer is showing an 8-pound garment at $2.15.

In 50c. grades the bleached and tinted yarn garment weighing about 8 pounds can be bought in tuck stitch at $3.37 1/2 and in fine stitch at $3.55. A combed peeler garment weighing 8 1/2 pounds with mercerized trim can be bought at $3.50 in tuck stitch and $3.60 in fine stitch, silk trim 12 1/2c. more.

The indications are that manufacturers of men's heavy weight cotton ribbed goods will endeavor to get the same prices this season as they sold their production at last year, namely, $3.50 for single thread goods and $3.62 1/2 for two thread goods, weighing 12 pounds on size 40.

Manufacturers of boys' fleeced goods are showing garments weighing 6 3/4 to 7 pounds on size 32 at $1.85 to $1.95, according to the finish and trim. An important step is being taken this season in this line by offering a line of misses' pants in sizes 24 to 34 at the same price as shirts and drawers and this will, of course, cut into the regular lines of children's fleeced goods to quite an extent. In fact, almost the entire children's fleeced business will be done on these lines on which one price from 24 to 34 prevails, and manu-

facturers must now figure a price on sizes 18, 20 and 22 alone. From what we can learn, it is the intention to ask an advance of about 25c. per dozen over which these sizes could be bought, if taken with a fair assortment of sizes from 18 to 34.

HOSIERY.

For a time prior to election there was a tendency to curtail the purchase of hosiery, but now that it is settled there is a marked revival of confidence in this line. Stocks have been lighter than usual and with a fair amount of business, such as we have had during the past two weeks, it becomes apparent that jobbers are not in a condition to meet any great demand for fleeced and wool hosiery. It is noticed that a great many people are wearing thin, light weight goods through the winter and it has become necessary for several buyers to order in part of their spring purchase to meet this call.

A patent hose has made its appearance lately in the shape of one with a pocket in the top just inside the welt. This is being put on the market by Brown, Aberle Co. of Philadelphia and while it may commend itself to a few people, we cannot believe it will come into very general use.

Some new designs of embroidered goods by domestic manufacturers are being shown, on which we predict a good business. They consist of black and colored grounds with allover embroidery and with lace back and plain panel front with embroidered designs of pansies, daisies, forget-me-nots, etc., with stalks and leaves of green and with flowers of different colors. These make an exceedingly showy line of goods for low priced merchandise and cannot fail to be good sellers, inasmuch as they may be retailed at 25c per pair.

Among the new solid colors for spring that are finding ready sale is a very rich new shade of old red. This promises to be a popular seller among the better class of trade.

CHEMNITZ REPORT.

There has been no change in the situation of the hosiery market during the last two weeks. Very satisfactory orders have been placed and especially in the lace hose they are much better than were expected and in consequence of this, prices on lace hosiery are very firm and no lines are being offered under the popular limits and even at these prices late buyers have trouble to place their orders. Manufacturers are sold well into the season and as a rule want longer time to make deliveries than buyers wish to allow. The scarcity of lace hose is not due alone to the demand from the United States, but are now very popular in all the markets of the world, and as the production has not been increased lately, the increased consumption makes the scarcity.

Embroidered goods are about the only fancies that are in great demand for next season. A few jacquard fancies are taken, but in limited quantities and stripes are not selling at all. Prices for staple goods are not as firm as they were during the season, although no important reductions have been made, makers being fairly busy.

Trade in men's half hose is better than it has been for several seasons. Plaited styles are being bought very largely in plain and heather mixtures. These mixtures are popular with stripes or embroideries, and while striped styles are not in demand in ladies' goods, they are more desirable than embroidered goods in half hose.

Trade in gloves for spring is still rather quiet. Orders are coming in very slowly and it looks as though the season would be rather a disappointment to the makers. The orders that have been placed are for medium and better grades, rather than on the cheap numbers. A few importers have bought long silk gloves in black, white and evening shades in limited quantities for immediate delivery.

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In the eighth century there were many soap manufactories in Italy and Spain, but its manufacture was not introduced into France until nearly five hundred years later.

The bleaching of Tussah or wild silk has been attempted with almost every known bleaching agent, but it is such an extremely difficult operation that it is usually woven in its natural color.

## SETTING UP AND CARE OF SPRING NEEDLE CIRCULAR MACHINES.

*BY F. W. HERINGTON.*

(Continued from April.)

Fig. 80 is a front view, and Fig. 81 a side view of a take-up for a spring needle circular machine. The take-up is the part of the machine which takes up the cloth as fast as knit on the needle cylinder and it is rolled up, in a roll on the roller, D, Figs. 80 and 82.

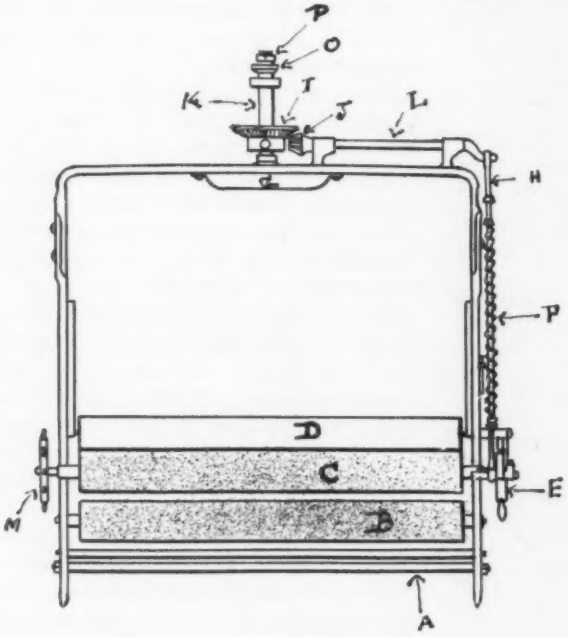



FIG. 80.

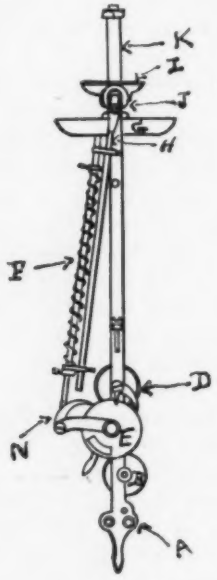



FIG. 81.

It is attached to the cross arm of the machine, and held by the stud, K, Fig. 80, the stud K revolving on the step O, which has a steady pin securing it to the stud, K. The nut P, above the step O, holds the take-up to the cross arm.

A, Fig. 80, indicates the 3 stationary rods of the take-up, the cloth being passed between the 2 lower rods and over the upper one, then under roller, B, and over roller, C, then around the loose roller, D.

Roller, B, is revolved by the friction of the cloth passing under it to roller C, which is the actual take-up roller.

E is a cover to the pawl gear which is attached to roller, C. M is a hand wheel also attached to roller, C, and used when the machine is not in motion, to tighten up the cloth between the needle cylinder and the take-up.

F, Fig. 80, is the take-up spring on the rod to which is attached the pawl N, the rod, H, being attached to rod, F, and spring, and also to rod, L. On one end of rod, L, is gear, J, which meshes into gear, I. On the other end of rod, I, is an eccentric, where it comes in contact with rod, H. Gear, I, is stationary, and is secured not to stud, K, but to the outside of the hub or sleeve of the cross arm, through which the stud, K, passes.

The gear, I, being stationary the whole take-up turns the gear with the needle cylinder, J, which in turn drives rod, L.

The eccentric imparts an up and down motion to rod, H and F, and pawl, N, and thus imparts a forward revolving motion to roller, C, and a backward revolving motion to roller, D, on which the cloth as knit is rolled. As the roll of cloth increases in size the roller, D, raises up between the two slots on each side of the take-up, until the roll of cloth reaches the top or up to oil pan, G,

when the roll is cut across. By slightly raising the roller, D, on one end, the roll with the roller, D, is easily removed from the take-up. The roller, D, is then removed from the roll of cloth, the cut end of cloth rolled around it, and replaced in the take-up by placing one end first in the slot at side and slightly elevating the other end. When dropped down it is ready to be filled again.

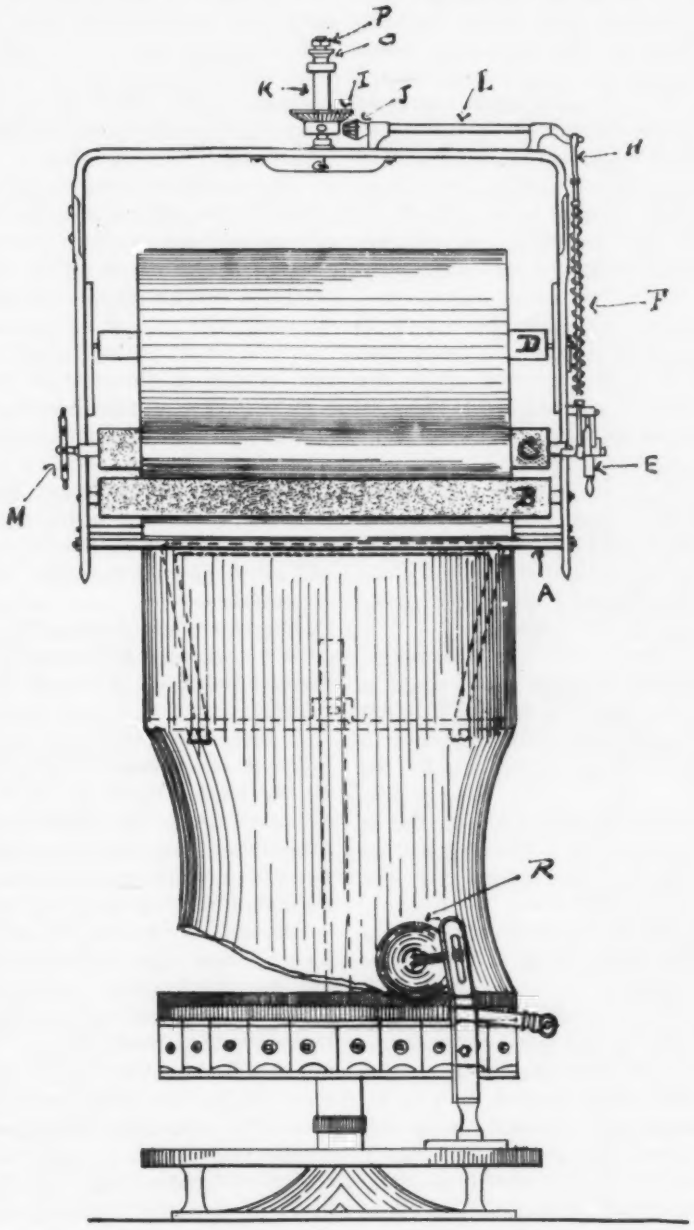



FIG. 82.

The whole take-up, with the roll of cloth as knit is revolved with the needle cylinder by means of the cloth spreader as shown by

the dotted lines under the cloth on Fig. 82. The upper part of this cloth spreader comes up between the two lower stationary rollers, A, Fig. 80, of the take-up. This upper part is attached to the lower part of the spreader which is oblong in shape. The whole spreader is attached to a shaft, also shown in dotted lines on Fig. 82, and which comes up through the stud on which the needle cylinder revolves. On the lower end of this shaft is a gear which meshes into one of the gears of a double pinion, one of which drives the needle cylinder, and the other the take-up, so that both needle cylinder and take-up revolve together and at the same speed.

A crown gear is attached to the end of the shaft of the double pinion, and a bevel gear is attached to the driving shaft under the table of the machine. This imparts the motion to the double pinion and thus to the needle cylinder and take-up.

Fig. 82 is a view of a spring needle machine, showing the cylinder and part of the feed, or the revolving cloth wheel, and the whole take-up, with part of the roll of cloth thereon, and also showing the cloth partly on the needles of needle cylinder.

To start a machine of this kind it is necessary to have a piece of cloth, about equal in width to the circumference of the cylinder which has been set up, and long enough to reach from the take-up roller, D, to the needle cylinder.

In a knitting mill already running, this is easily obtained by getting a piece of knitted cloth made on some other cylinder of the same size. If in a mill in which the first cylinder is being started, then the body of a shirt would have to be procured with which to make the first start.

Having secured one end of the cloth to the take-up roller, D, and passed it around rollers C and B, and through roller A, and over the spreader, and wound it up, by the hand wheel, M, leaving sufficient length below the rods, A, to just reach the needles, the cloth is put on the needles, to the left of the revolving cloth wheel, Fig. 82, R, and carried down to the top of the leaded part of the needles so as to have it pass in under the revolving cloth wheel. The cylinder is at the same time turned by hand.

The yarn having first been threaded into the yarn guide of the sinker burr, the cloth as put on to the needles, is passed under the revolving cloth wheel, carried up by the landing burr to the points and over the beards of the needles. The beards are closed by the needle presser, and then cast off by the cast-off burr. New loops or stitches are formed from the yarn fed to the tops of the needles by the sinker burr.

During this operation of forming the first course of loops or stitches, the sinker burr is set into the needles deep enough to lay sufficient yarn to make the loops long enough. The loops should be clearly formed. If not, it will probably be found that the needle presser is not pressing against the beards of the needles hard enough to thoroughly close the beards of the needles, and permit the landing burr to carry the cloth over them.

Clear or perfect loops cannot be formed unless the landing burr and needle presser operate together at the same time to carry the cloth up and over the closed beards of the needles.

The cast-off burr completes the formation of the new loops by carrying the previously formed loops up and over the tops of the needles.

If there is more than one feed on a cylinder it is necessary, in order to produce evenly knitted cloth, to have all the sinker burrs set into the needles, of equal depth. One sinker burr may be making a long stitch, and the next one a short stitch, and they must all make the same length of stitch.

The way to accomplish this is to take a piece of wire about 12 inches long and measure the yarn from the end of the yarn guides by marking it with a little black grease between the thumb and finger. This is done on all the feeds, after which the machine is slowly turned by hand until the marks made come up to the ends of the yarn guides. The marks made by the longest stitch will reach the yarn guides first. Adjust the sinker burrs in or out as required, and then repeat the operation of measuring until the yarn of all the feeds comes up to the ends of the yarn guides together, when all the stitches from each and every sinker burr or feed will be found to be even.

In some makes of spring needle machines there is used what is called a clearing wheel for the plain feed, in addition to the wheels already described. An evener burr is also used, but these are not necessary to the formation of the plain stitch, but are auxiliaries.

The purpose of the clearing wheel used in connection with a plain feed is to "clear" the needles of any bunches or lumps that may be in the yarn or cloth before they come in contact with the sinker burr. These might result in the breaking of needles. It is set in front of, and to the left of the sinker burr, and just ahead of the revolving cloth wheel. It is set the same as an outside cast-off wheel, except that it is made on the opposite angle to the outside cast-off burr.

The work of the cast-off burr is to carry up and cast over the needles. The work of the clearing burr is just the opposite, namely, to carry down to the bottom of the needles any bunches or lumps of yarn that may be left at the tops of the needles, after the revolving cloth wheel has commenced to carry the cloth down. It is set low enough to carry all bunches to the bottom of the needles, and high enough so that its wings or blades in entering the needles will be above the tops of the needles, and thus "clear" before they pass to the sinker burr.

## A KNIT FABRIC.

A method of knitting tubular fabrics so that they can be cut into lengths suitable for garments has recently been patented in this country. The inventor states that it offers advantages first, in saving the time heretofore expended in measuring the fabric to determine the proper intervals at which to sever it; second, in that the series of loops at the ends of the severed sections of the product are in a single complete course, and consequently adapted for immediate use in transfer-work, without the waste of time and material in the unraveling operation heretofore necessary, and, third, that the divisions of the knit tube being of uniform length the ultimate manufacture of hose, sleeves, etc., is facilitated and the time and labor necessary to match the pairs is materially reduced.

Fig. 1 is a side view of a continuous knit tube comprising a series of detachable hose-sections, each including a heel and a toe pocket. Fig. 2 is an enlarged diagram showing a fragment of fabric with the frangible-thread zone. Fig. 3 shows the apparatus used in making the fabric. Fig. 4 shows the position of the thread-changing devices during the knitting of the body portion of the tube. Fig. 5 shows the position of the thread-changing devices during the knitting of the frangible-thread zone. Fig. 6 shows the position of the thread-changing devices during the simultaneous knitting of both the body-thread of the fabric and the frangible thread.

The continuous tube comprises distinct sections, 2, of uniform length knit of ordinary body-thread, 3, and detachably connected by zones, 4, of frangible thread, 5. In the particular work shown each of said divisions, 2,

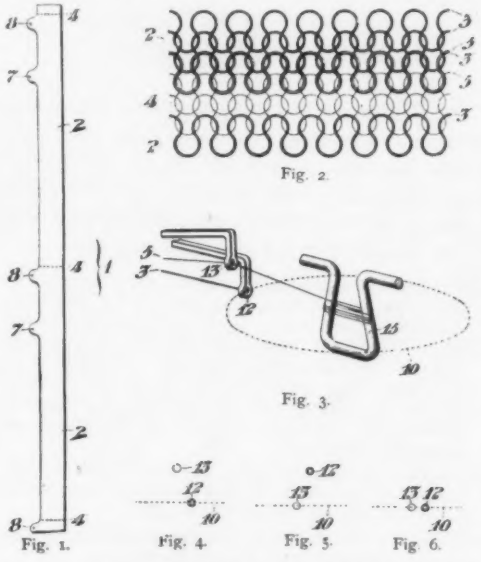



Fig. 1. Fig. 2. Fig. 3. Fig. 4. Fig. 5. Fig. 6.

comprises a complete hose-blank provided with a heel-pocket, 7, and a toe-pocket, 8.

Fig. 2 shows the body-thread thrown out of operation and the frangible thread thrown into operation at the same instant upon the lower side of the frangible-thread zone, 4. The threads are thrown into and out of operation at different times upon the opposite side of the zone, so as to be knit simultaneously in coincident loops during one course or portion of a course.

The dotted line, 10, Fig. 3, indicates the circle of needles. The body-thread, 3, and frangible thread, 5, are delivered to the needles through respective thread-guides, 12 and 13, which may be raised and lowered to interchange the threads at the proper times.

In order that both the body-thread, which is floated during the knitting of the frangible thread, and the frangible thread, which is floated during the knitting of the body-thread, may be automatically detached from the fabric, the bracket, 15, is mounted in stationary position above the needle-cylinder and extends below the top edge, as indicated in Fig. 3, so that when either of the thread-guides, 12 or 13, is lifted from operative position the end of the thread extending through it to the fabric being drawn across the cylinder is wrapped around the bracket, and thus broken from the fabric.

## KNIT GOODS TERMS.

The following list of knit goods terms and their definitions was compiled by the Dry Goods Economist and will be of interest to those engaged in the manufacture and marketing of knitted fabrics as showing how the terms are used in the dry goods trade:

Balbriggan:—Named for the town Balbriggan, Ireland, in 1845. Was first applied to full-fashioned hosiery made from unbleached cotton. About 1860 the name was applied to knit underwear of the same material. Originally it was used only on high-class goods, but it now covers everything in light-weight flat underwear made of yarn stained to the shade of Egyptian cotton.

Cashmere:—When applied to hosiery or underwear means goods made of fine worsted yarn spun from Saxony or other soft wools.

Collarette:—A wide, knitted neckband used on men's undershirts in lieu of binding.

Corduroy:—Commonly known as two-and-two-rib, or two ribs alternating on face and back of children's stockings.

Cut Goods:—Underwear made of either ribbed or flat webbing knitted into long rolls and cut to the proper lengths and sections for garments, after which the various parts are sewed together.

Derby Rib:—Applied to hosiery having six ribs on the face, alternating with three on the back.

Double Sole, Heel and Toe:—Means an extra thread added to hosiery at points mentioned. Strictly speaking, "double" applies only to single-thread goods.

English Foot:—A stocking having two seams in the foot, one on each side of the sole.

Equestrienne Tights:—A tight-fitting, knitted drawer for women's use, made of ribbed cloth, either with or without feet.

Extracted:—A term applied to stockings on which wax is applied before dyeing to form the fancy design or pattern. After placing in cold dye they are washed in hot water to remove the wax, leaving the pattern in the natural color.

Flat Underwear:—A term applied to undergarments knitted in plain stitch.

Fleece-Lined:—A term applied to a variety of heavy-weight undergarments knitted with three threads—namely, face yarn, backing yarn and a third thread of yarn tying the face and back together. The heavy nap of fleece is produced by running the cloth through wire rolls, called brushers. (Note.—The term fleece-lined is often misapplied to ordinary single-thread underwear which has been run through the brushing machine for the purpose of raising a light nap on the inner surface.)

French Foot:—Stockings so-called because they differ from the English foot in that it has only one seam and that in the centre of the sole.

Full-Fashioned:—Underwear or hosiery finished with flat seams having selvage edges throughout and knit in flat, separate sections upon machines which automatically drop the requisite number of stitches at various points to make the garments conform to the natural shape of the leg, foot or body.

Full Regular (sometimes called looped):—A term applied to hosiery or underwear in which the seams have been connected by hand knitting.

Gauge.—Applied to the number of meshes or wales to the inch in underwear or hosiery. For example, a 16-gauge fabric will have 16 wales or ribs to the inch.

Gauze:—Meaning very thin and sheer.

Herringbone:—The name of a binding often used in facing the neck and front opening of undershirts, so called because of its resemblance to the backbone of a herring. Applied to hosiery it refers to the stitching, which is made to cover the edge of the split sole.

Hose:—A term applied to women's or children's stockings. The term half-hose is used on goods for men's wear.

Ingrain:—A term applied to raw material or yarn, dyed before knitting.

Jacquard:—A name applied to hosiery knitted in fancy patterns of two or more colors on machines moving automatically, with separate threads working independently of each other, forming combinations not possible on ordinary knitting machinery.

Lisle Thread:—Used in the manufacture of hosiery or underwear and so called because made of a long, staple cotton, combed and hard-twisted, after which it is run through a flame in order to burn off the peach-like fuzz always to be seen on other yarns made from cotton.

Maco Foot:—A term applied to hosiery, the foot of which is composed wholly of unbleached yarn, while the leg is of black or color.

Maco (Mahko):—Applied to hosiery or underwear made from pure Egyptian undyed cotton. The name is derived from an Egyptian cotton planter who was called Maco-Bey.

Merino:—A name applied to hosiery or underwear made of part cotton and part wool mixed together. (Note.—The word merino on a box label is often misleading, as it frequently happens that goods so called are composed wholly of cotton.)

Mesh Underwear:—All knit underwear cloth is mesh in varying degree, but the common application of the term means a woven or knitted fabric having a net-like appearance.

Mock Seam:—Applied to stockings made with cut leg and fashioned foot.

Opera Hose:—A name given to women's stockings of extra length, ordinarily measuring 34 inches.

Outsize:—A term applied to women's stockings made in extra widths.

Plated:—A term applied to hosiery or underwear having a face of one material and the back of another; for instance, a garment having a wool face and cotton back is called plated. The face may also be of one color and the back of another, both of the same material.

Printed:—Low-grade fancy stockings on which the design is placed by a printing process are called printed hosiery.

Rembrandt Rib:—Is applied to women's stockings having groups of five drop-stitches, separated by one inch of plain knitting running the full length.

Richelieu Rib:—Applies to women's plain stockings having a single dropstitch at intervals of three-quarters of an inch running the full length of the stocking.

Seamless:—The name applied to stockings knitted in one piece on a circular machine, leaving an opening at the toe to be looped together. The shaping of the leg, heel and toe is obtained by steaming and then drying on boards of proper form.

Split Foot:—Refers to black or colored hosiery having a white or unbleached sole.

Spun Silk:—This term is applied to a low grade of silk used in the cheaper lines of silk hosiery. It is made from floss, injured cocoons, husks and waste from reeling. It bears the same relation to silk as cotton waste to cotton or shoddy to wool.

Three-quarter Hose:—A variety of ribbed-top stockings made for children and reaching nearly to the knees.

Trunk Length:—Applied to women's hosiery midway between ordinary and opera length, and which is usually widened gradually above the knee.

Twin Needle:—Referring to a double row of interlocked machine stitching used for covering raw edges and seams on knit underwear.

Union or Combination Suit:—Is a style of underwear combining the upper and nether garment knitted in one piece.

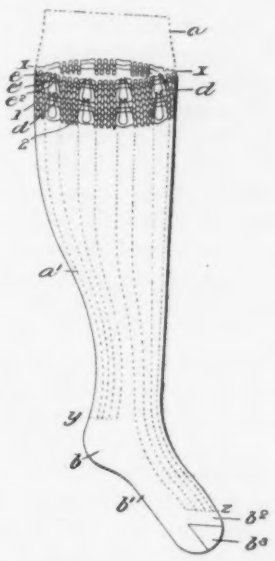
Welt:—The double thick portion or wide hem at top of plain hose.

Wrapper:—A child's undershirt buttoning down the front the full length.

## SEAMLESS HOSIERY.

A method of producing open-work effects in seamless hosiery has recently been patented in this country. The construction is shown in the accompanying illustration, and is thus described by the inventor:

Hitherto manufacturers of ornamental seamless hose or stockings have been able to make the ornamental open-work or lace-work on the front of the stocking only, and such ornamental lace or open work began at




the top of the stocking and continued down over the ankle and front of the foot to the toe portion. By this new method it is possible to produce an article of this class having a portion of plain knitting at the top of the leg of the stocking, the leg composed of sections of lace-work alternating with sections of plain knitting around the entire leg, the heel and bottom of the foot and toe being made of plain knitting, while the open-work sections are continued over the ankle and foot with a portion of plain-knitted fabric

interposed between the lower end of such open or lace work sections and the toe.

At the top of the leg portion is a plain-knitted portion (a). Commencing at the point (xx) the leg of the stocking is formed of plain-knitted portions, (c) united by open-work or lace sections (c′), the one alternating with the other entirely around the leg. The loops of the several courses forming one figure of the lace or open work are made as follows: Starting at the plain section 1, the thread forms a straight cross-thread (e) to the next plain section, crossing the space of one or more plain loops. A given number of plain loops are then made.

The thread then makes a further cross-thread to the next section of plain knitting, and so on entirely around the leg of the stocking. On the next round the cross-thread (e′) is made in like manner. On the third round the cross-thread ($e^2$) is made in the same manner. On the fourth round the cross-thread is drawn down over the three cross-threads (e e′ $e^2$), forming the elongated loop (d), as is well understood in the knitting of tuck fabrics. This is continued to the point marked (y), where the heel is knitted of plain loops. After the formation of the heel the knitting is continued, forming the bottom of plain loops and the top of the ornamental courses and plain sections, as hereinbefore set forth, until the point (x) is reached, at which point a number of plain-knitted courses are formed entirely around the stocking.

The toe is then completed with plain loops, thus forming a stocking which has the plain-knitted portion, (a), the leg of ornamental sections, (a′); the heel (b) of plain loops, the bottom of the foot of plain knitting (b′), and the sections ($b^2$) of plain knitting interposed between the ornamental courses and the toe ($b^3$) of the stocking.

This stocking may be made of one continuous thread, or it may be made by knitting the heel and toe of one thread and the remaining portions of the stocking from another thread, or it may be made by forming the heel and toe of one thread and the other portions of the stocking knitted from two, three, or four other threads.

The stocking may be knitted upon a machine constructed to produce tuck-knitting, provision being made for causing the needles of the front and back portions of the stocking to be thrown separately into operation to knit tuck or plain knitting, as desired.

## Drop Stitches.

*Editor Textile World Record:*

In knitting Richelieu rib 2 x 2, I am troubled with occasional drop stitches from the cylinder needles. How can the machine be adjusted to stop this trouble? When knitting lace stitch goods by the use of long latch dial needles I find that the cylinder needles just preceding the long latch needles are apt to drop stitches. The same machine will knit 2 x 2 perfectly.

Enclosed are three samples showing the defects.

No. 1. Richelieu rib. Notice that the drop occurs on the first needle of the six. This is nearly always the case.

No. 2. Richelieu rib. Notice that the drop occurs on the first needle of the pair on the 2 x 2 part.

No. 3. Lace stitch. Notice that the drop occurs on the cylinder needle just preceding the long latch needle in each case.

What is the remedy?

Richelieu (478).

This question appeared in the October issue. Further information regarding the difficulty is supplied by an expert as follows:

The drop stitches may be caused by needles which have poor hooks. When the cylinder needle starts to rise, after having drawn the loop, the stitch rolls off the front of the hook.

Again they may be caused by the hole of the yarn guide being a little too high, so that when the yarn is being fed to the cylinder needles on the angle, these particular needles which drop the stitches work freely in the slots, and the take-up not drawing very tightly on the cloth, the needles have a tendency to drop of their own accord instead of remaining up until drawn down by the stitch cam. This causes these particular needles to miss the yarn.

I infer, however, that Richelieu has doubtless tried different adjustments of the yarn guide without effect, but it may be possible that even when he has set the yarn guide down as low as the dial needles will permit him to do, the hole may still be too high to prevent the cylinder needles from engaging the yarn on their downward movement.

In changing the position of the hole in the yarn guide, care must be taken not to get it too low. If it is too low the end of the latches are liable to catch in it, resulting in bending them.

Again the drop stitches may be caused by the

dial needles not drawing their stitches back at the right time. As soon as the cylinder needles start to rise, the dial needles should start to draw back, so as to keep the newly formed loop tight on the cylinder needle, and thus prevent it from rolling over the hook of the cylinder needle, as the pull from the take-up on the loops is greater on the dial needles.

From a close examination of samples 1 and 2 I am of the opinion that this latter cause is the real one in this case. If so, the remedy for this is to set the dial to draw the needles a little earlier; if this cannot be done without throwing out the proper adjustment of the yarn guide in respect to the dial needles, then the cylinder needle cams should be fixed so the needles will be held down a trifle longer before beginning to rise.

Regarding the lace stitch sample No. 3, as the drop stitch is always from the needle preceding the long latch needle, which accumulates 4 courses of yarn every time before knitting, I think that this accumulation of courses is primarily the cause of the dropping.

The long latch needle in holding its stitch while 4 courses of loops are being knit on the other needles, it follows that the whole pull of the take-up is entirely on the long latch needle stitches, so that the loops in between the long latch needle stitches are lying loosely on the needles, the loop just preceding the long latch needle being more so than those preceding it. The cylinder needle thus rises and the loop rolls over the hook, for it will be noted in this sample, No. 3, that the drop stitch is the one after the fourth course, or when making the fifth course, which is when this preceding loop is loosest on the needle.

It may be asked why does not the loop immediately succeeding the long latch needle drop also, but this is answered by the fact that as quickly as the long latch needle forms its loop on the fifth course, it drops the accumulated previous four courses, and the pull of the take-up is immediately transferred to the succeeding loops, and prevent them from dropping.

The remedy for this is either to have the cylinder lower cam made so that just as soon as the needle has drawn its loop (by passing under the stitch cam) it should rise as quickly as possible, or make the cam so as to hold the stitch down until the succeeding ones have made their loops, and the take-up has had an opportunity to pull upon them, and thus prevent them rolling off the hook, which they are liable to do, if not held down a sufficient length of time or if the cylinder needles ascend too slowly.

If these remedies do not enable Richelieu to overcome the difficulty and if he will state what he has already tried without effect, we may be able to offer further suggestions that will help him.

F. W. Herington.

## Contracts for Entire Product.

The attention of hosiery and knit goods manufacturers is called to the fact that Ellis Brothers, wholesale dealers in hosiery and underwear, are prepared to contract outright, or in part, for the production of their mills. The firm is rated strong financially and offers cash in all instances when and where desired. The Messrs. Ellis, being well known to the jobbing trade, also solicit the business of mills desiring to reach this class.

This firm has been in business for more than ten years, having started in a small way, and has now become one of the large houses in the hosiery business. Since moving to the large store at 434 Market St., Philadelphia, Pa., occupying nearly the entire building, they found themselves crowded for room on account of increasing business, and have erected a large warehouse at 326 DeLancey St., in which to store their goods, the building being of fire-proof construction. Even now they are crowded for want of space, and if their business in the future increases as it has done in the past it may be necessary for them again to seek larger and more commodious quarters. Some of the hosiery jobbers were complaining of business in the summer and autumn, but Ellis Brothers state that they do not know of any time when business with them has been dull and their purchases are always unlimited.

## Otto Walther Takes the Dresden Knitting Machine Agency.

It will be a matter of interest to the knitting trade to learn that the American Agency of the Dresden Knitting Machine Works, Dresden-Loebtau, Germany, builders of machines for sweaters, golf hose, gloves, etc., has been assumed by Mr. Otto Walther, 591 Bourse Building, Philadelphia, Pa., succeeding Walther Schoebel of Newwark, N. J. Mr. Richard Irmscher of Dresden has recently been in the United States and consummated the arrangement. This will be agreeable news to the large and growing number of manufacturers who are interested in this class of machinery. They can feel assured that in Mr. Walther's hands the agency will be ably and honorably represented, and that their requirements will receive intelligent attention from one who is thoroughly familiar with this class of machinery.

New York, Averill Park. Work has been suspended a few days during the week in the Faith Knitting Co.'s mill to allow for some additions.

New York, Cohoes. The Barnett & Aufsessor Knitting Co. is adding a 60-inch garnett machine to the plant.

## KNITTING MILL NEWS.

**New Mills.**

Massachusetts, Methuen. The Jersey Cloth Company has been incorporated with capital stock of $40,000, with Frank Remick, president and Perley D. Smith, secretary and treasurer.

Massachusetts, Pittsfield. James O. Purnell, who has been operating a plant on yarns, is to retire from business and will devote his time to manufacturing mittens and tam o'shanters, for which he has patented machinery. Although the plant is to be conducted at this place, he has not yet decided upon location.

*New York, Cohoes. The Fitwell Knitting Co., recently reported incorporated with capital stock of $60,000, will operate the Riverside Knitting Mills. The plant is to be enlarged and greatly improved and will be put in operation about Dec. 1st, making cotton and wool merino and jersey ribbed goods for men and children. Nathan Hatch is president and general manager of the company; J. S. Friedman, treasurer, and Walter Buck, secretary and resident manager. They will operate 72 knitting and 95 sewing machines; 10 sets cards and 2360 spindles. Sixteen new knitting machines will have been put in. Dye house will be attached. Goods will be sold direct. An addition 60 by 37 feet will probably be added.

North Carolina. Winston-Salem. The Wachovia Knitting Mills Co. has been incorporated with capital stock of $50,000, with privilege of increasing to $100,000. Among the incorporators are W. S. Seiwers and the Salem Iron Works.

Pennsylvania, Philadelphia. Gee Brother & Co. is the name of a new concern just about to start up in the manufacture of fine hosiery for both men and women. The company has leased, as temporary quarters, one floor in the building at the N. E. cor. of Mascher and Master streets, in which they will put machinery ordered from the Standard Machine Co. and the McMichael & Wildman Mfg. Co. The Messrs. Gee, who are about to start out in this business are all well known knitters and experienced in this line of manufacture, and are confident that the product of their plant will meet with success from the trade. The goods will be sold direct.

Pennsylvania, Philadelphia. The Royal Knitting Mills Co., recently incorporated with a capital of $10,000, has secured quarters at 1427-33 Catharine Street, where they are manufacturing infant's and boy's sweaters on 15 automatic latch needle machines and 10 sewing machines. The goods are sold direct and through New York. Mr. B. Robbins in the president, treasurer and buyer and M. Levin, superintendent.

Pennsylvania, Philadelphia. The Vesper Hosiery Mills, owned and operated by James Creshkoff and Hoffman Bros., at 1214 Crease street, are very busy. The concern is operating 40 knitters on women's seamless hosiery and are now getting out samples of half hose for men which they intend to manufacture in addition to their fine line of women's hose. Ten new Standards have just been ordered by them and will be started up as soon as delivered. They sell their goods direct.

**Enlargements and Improvements.**

Massachusetts, Pittsfield. The Musgrove Knitting Company is to enlarge the plant and is looking for suitable quarters. It is quite probable that the firm will lease the ground floor of the steam power plant recently reported taken by Mahoney & Co.

Massachusetts, Ware. Several additional knitting machines and some dyeing apparatus have been installed in the ware Hosiery Co.'s mill.

*Michigan, St. Joseph. Cooper, Wells & Co., manufacturing seamless hosiery, have completed erection of a three-story brick warehouse, 50 by 150 feet, heavy mill construction and equipped same with automatic sprinklers. They have also begun work on a new dye house and have main part, 153 by 48 feet, nearly completed. The machinery, which will be of the latest (ordered), will be installed this fall. A new 225 h. p. engine with a direct connected 200 h. p. generator has also been put in.

Pennsylvania, Philadelphia. The United States Knitting Co., manufacturers of woolen and worsted sweaters and blouses, using 40 knitters and 28 sewing machines in their operations, report that they art looking for a new building in which to conduct their business, which has greatly increased since they started up a year or so ago. The capital of the concern is to be increased and a large number of new machines added, all of which art to be run by power. They are now located at 426 and 428 Market Street which they expect to vacate on or about January 1st. The goods are sold direct.

Pennsylvania, Philadelphia. An extension 23.8 by 52.10 feet is to be built to the boiler house of the Powell Knitting Company at 28th and Parrish Streets. The cost of same will be $1,600. The permit for the operation has been granted and it will be commenced at once.

Pennsylvania, Philadelphia. The Chemnitz Manufacturing Co., 1226 Orkney Street, report that they are busier now than ever in the history of the company. Many new machines have been added to enable them to keep up with their orders. They manufacture men's, women's and misses' seamless fashioned, ribbed and flat hosiery, which is sold through New York, Pittsburg and Chicago. Mr. F. Ulrich is the superintendent and manager.

Pennsylvania, Philadelphia. The Eagle Knitting Mills, now at 1071 Germantown Avenue, of which Arthur Abramson is the proprietor, after the first of January will remove their establishment to other quarters larger than those which they now occupy and where they will put in new machinery of all kinds to be used in the operation of manufacturing sweaters and ladies' knitted blouses, the plant hereafter to be run by steam instead of hand power. They are now very busy operating 6 knitters and three sewing machines, the goods being sold through agents and direct.

Pennsylvania, Philadelphia. The Girard Knitting Mills, located at 10th and Susquehanna Avenue, reports that they are 3,000 dozen behind their orders, with more coming in. The capacity of the plant, which is run by electricity, has been doubled,

and will again be enlarged to meet the increased demand for their goods. Mr. R. M. Yost, the former manager of the company, is no longer there, Mr. H. Schnapper taking his place. They manufacture Tam o' Shanters and toques on 15 knitters and 5 sewing machines which they sell through New York. They buy yarns; mohair 18/2 and 12/2; worsted 17/2; cotton 1/6 and 1/8.

**Mills Starting Up.**

Massachusetts, Methuen. The Knitted Fabrics Company has resumed operations in all departments after shut down of several weeks.

*New York, Arcade. The Fashion Knitting Mill has been secured by C. B. Krouse and A. G. Velasko of Syracuse, who will make repairs to the mill and start operations as soon as possible. An addition will also be built to the plant.

New York, Athens. Operations have been resumed in the Athens Knitting Company's mill which has been closed for some weeks.

*New York, Little Falls. Operations will be started up in the spring in the Eagle Knitting Mills by E. I. Stinson and Frank Senior.

*Pennsylvania, Lebanon. Operations have begun in the Hawk Knitting Co.'s branch mill.

*South Carolina, Spartanburg. The Crescent Manufacturing Co. has started operations manufacturing a high grade of misses' fine ribbed hose. The building is 62 by 132 feet, 2 stories, with dye house 40 by 60 feet, one story, and is equipped with 50 Geo. D. Mayo full automatic knitters, 50 McMichael ribbers and 16 Hepworth loopers. This equipment is to be increased in the future.

*Tennessee, Chattanooga. The Davis Hosiery Mills have begun operations in their new plant.

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**Facts and Gossip.**

*Georgia, Hartwell. We have been advised by Asa G. Candler that there is nothing in report made last September regarding establishment of a rope mill.

Illinois, Beloit. The Halls Glove Company has been incorporated with capital stock of $20,000 for purpose of starting up manufacture of knit gloves and mittens. B. Dord, John Halls and Wm. K. Hay are among the incorporators.

New Jersey, Camden. The Watt Manufacturing Company has been incorporated under New Jersey laws with capital stock of $100,000. D. Edgar Coe, Lida M. Calvert and G. Oswald Calvert are among the incorporators.

New York, Greenwich. M. C. Rowe has purchased Jesse V. Palmer's interest in the Van Zile Knitting Co. and will form a new company to operate the Graot Mill.

New York, Saratoga Springs. It is reported that a glove and mitten factory is to be established here.

*New York, Troy. The Aetna Mill property operated by the Wright's Health Underwear Company has been purchased by them for $150,000.

New York, Troy. The Green Island Knitting Mill is being operated overtime.

Pennsylvania, Lyons Station. Geo. W. Malick, operating the Lyons Knitting Mill, is reported to remove the machinery shortly to Herndon.

Pennsylvania, Philadelphia. The Carlton Knitting Company, 23rd and Hamilton streets, report that they are so busy that it is impossible for them to get out but one-fourth of the orders which they are receiving for their tam-o-shanters and toques. They are now operating 12 knitting and 10 sewing machines and are continuously adding to the number to keep up with the rush. Mr. A. W. Hess is the superintendent. The plant is run by steam. They buy cotton, wool, worsted and mohair yarns.

Pennsylvania, Philadelphia. The Pennsylvania Knitting Mills, whose office is at 314 Market street, is about to make a change in its management, Mr. Robbins retiring from the firm. The business in the future will be conducted by S. Grushlaw & Company under the old name. The production of this plant is sweaters, men's boys', infants' and ladies' cardigans, toques and Tams, which are manufactured on 25 machines, all being sold direct.

*Pennsylvania, Richland Station. A meeting will beheld December 17th to decide whether or not the plant of the Richland Knitting Mills Company will be sold.

Pennsylvania, Tower City. A hosiery mill is to be established here by Henry Fetherhoff in the factory vacated by Dr. Haak. The Saul Knitting Mill, now at New Ringgold, will be removed here.

Pennsylvania, York. At the sale of the property of the Ruth Automatic Knitting Machine Co., Edwin T. Moul of New York, the former president of the company, is understood to have bought it, probably with the view of reorganization. Price paid was $20,000.

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**Personals.**

George H. Jepson, for several years vice president and superintendent of the Valentine Knitting Company, has removed with his family to Schenectady, N. Y., where he has a position as superintendent of a mill.

John Barrington has accepted the position of superintendent of dyeing and finishing for the Knitted Fabrics Company, Methuen, Mass. He succeeded Joseph D. Price.

Matthew Trimble is now with the Superior Underwear Co., Bowling Green, O., as knitter and finisher.

Joseph Price, overseer of dyeing and finishing for the Knitted Fabrics Company, Methuen, Mass., has resigned.

Louis Eddy has resigned his position as assistant superintendent of dyeing at the Knitted Fabric Mill, Methuen, Mass.

Frank E. Fairchild has been appointed superintendent of the Canasawacta Knitting Co.'s mill at Sherburne, N. Y.

John McGovern, formerly overseer of finishing in the Mohawk Valley Knitting Mills, Mohawk, N. Y., has accepted a similar position with the estate of Charles B. Alling, Derby, Conn.

# New Machinery and Processes.

**This department is designed to present from month to month a brief mention of new machinery, devices, and processes being brought out in this country and abroad, that are of interest to textile manufacturers. It is not a list of patents, but of improvements coming on the market. The idea being to present to our readers a systematic monthly record of new machinery, etc., of interest to textile mill men.**
**We invite machine builders and others to send us such information for this department.**

**Cloth and Yarn Dyer.** The Vacuum Process Co., Boston, Mass., are introducing an improved dryer for cloth and yarn which was invented and has been developed in the Cocheco Print Works, Dover, N. H., under actual mill practice. A description is given in this issue.

**Friction Clutch.** The Carlyle Johnson Machine Co., Hartford, Conn., are introducing to the textile trade a friction clutch whose merits have been thoroughly tested under very difficult conditions. A description appears in another part of this issue.

**Warp Drawing-in Machine.** Barber & Colman, of 11 Pemberton Square, Boston Mass., are about to bring on the market a machine for tying-in warps for the loom. They have been at work on the development of this machine for several years. We understand that one has been running in the Olympia Mills at Columbia, S. C., since the first of August. Another has recently been installed in the same mill, and both are reported to be running successfully.

**Automatic Loom.** George Keighley, Burnley, England, is introducing an automatic shuttle changing loom which embodies several novel features. The motion for removing the empty shuttle is a new one and it is said that the change occupies less time than that in other shuttle changing looms. Twelve of these looms are now running at Mather & Platt's works at Manchester, six being driven by electricity and six by mechanical means.

**Cloth Dissector.** Edward Smith, Bradford, England, is introducing a device for counting the ends and picks in the analysis of fabrics. It is intended to take the place of the ordinary pick glass and for some cases it is claimed to be superior to that instrument.

**Improved Noble Comb.** Prince, Smith & Son, Keighley, England, have adopted an improvement in their Noble comb by which the small circles can be more easily removed. Each shaft with the corresponding pillar is made in two parts. The upper and lower parts of the pillar are fastened by bolts and nuts when the motion is in operation. The two parts of the shaft are connected by a coupling. By this means the pillars and shafts can be disconnected and separated when the circle is to be removed.

**Electric Drive.** The Alliance Electrical Co., Manchester, England, are equipping cotton machinery with their electrical drive, by means of which a spinning frame can be started at a very low speed and by gradual stages brought to the highest speed desired.

**Warp Chaining Machine.** W. Hurst & Co., Rochdale, England. A machine for forming warps into chains, that is, linking them together preparatory to dyeing or bleaching. It is said that when a warp chained with this machine is beamed or dressed all the threads are found to be in their places, crossing or entanglements being avoided.

**Thread Spooling Machine.** Walter McGee & Son, Ltd., Paisley, Scotland. An improved machine for spooling cotton sewing thread. It is built with either six, eight, ten or twelve spindles. It is claimed that the ten spindle machine can fill from 40 to 45 gross of 200-yard spools in ten hours.

**Band Stretching Machine.** Cook & Co., Manchester, England, are introducing a stretching machine for spindle bands. It is said that after leaving the machine the band is wound on a skeleton bobbin where it feels more like a piece of metal than a textile product.

## THE VACUUM AND CELL DRYERS FOR CLOTH AND YARN.

These machines embody not only a newly discovered principle in drying cloth and yarn, but also the thorough development of that principle in actual practice in the print works of the Cocheco Manufacturing Co., Dover, N. H. The machines have proved so successful there and in several other mills where they have been introduced that the Vacuum Process Co., 15 State street, Boston, Mass., has been organized to place them on the market.

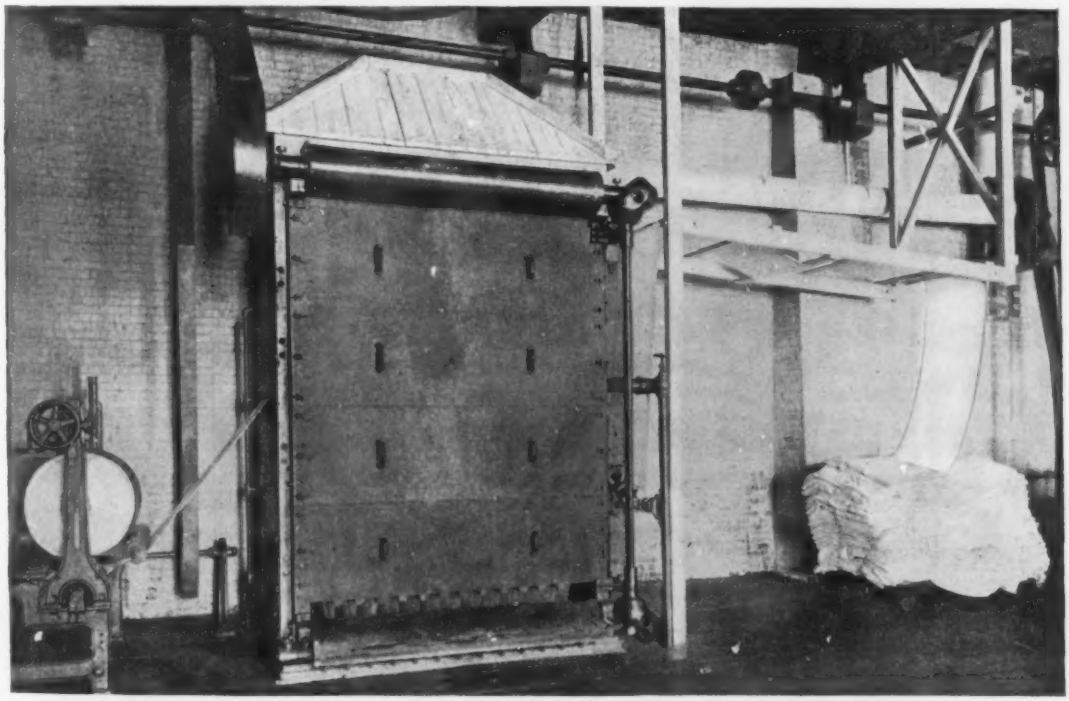

FIG. I.

The history of the cell machine is very interesting. It originated in the idea of enclosing ordinary dry cans in a vacuum chamber, the cloth passing into and coming out of this chamber through air tight gates. This arrangement did good work and the next step consisted in the use of smaller cans on the principle that the drying surface of small cans is larger in proportion to their bulk than is that of larger ones. The operation of the smaller cans proved this principle to be sound in practice, but a serious difficulty was encountered in the many stuffing boxes that were required, two being necessary for each can. In addition to the trouble and expense of packing them it was practically impossible to keep them tight. This difficulty suggested the remedy which involved a new principle in drying.

Steam heated cells or plates were substituted for the cans. They have about six times the heating surface obtained from the ordinary drying cans for a given floor area and all stuffing boxes are avoided, because all the heating surface is stationary, the cloth and the necessary guide rolls being all that is in motion. The improvements obtained from the stationary cells made the cell machine greatly superior in every respect to the can machine, and at this stage of development an open air cell machine was built. The intrinsic merit of the vacuum principle of drying was in no wise impaired and can be utilized for the cell machine as well as for the can dryer.

From this point the development of the machine consisted simply in the improvement of mechanical details, and this, as well as the preliminary work, has been carried on, not in a machine shop, where the question of how certain changes would work in practice must be largely a matter of judgment, but in the Cocheco Print Works, where an enormous product of cotton goods was being finished. Every difficulty was encountered that would be likely to arise in the practice of any mill, and every proposed improvement was thoroughly tested before being finally adopted. The machine as it is offered to the trade today is, therefore, the product of a process of evolution, and is in no sense of the word an experiment.

Fig. 1 shows a machine in actual operation. The cloth is entering at the right and coming out of the machine at the left.

Fig. 2 shows a 50-cell dryer with the housing removed.

The individual cell is seen at Fig. 3. It is a single iron casting provided with a steam nozzle at one of the upper corners and a drip nozzle at the opposite lower corner. The interior construction prevents the accumulation of water or air and makes the cell strong against both interior and exterior pressure. The surface in contact with the cloth is ground smooth. These cells are bolted together in sections, as shown at Fig. 2, in such a way that the feed and drip nozzles form continuous connections for the entire

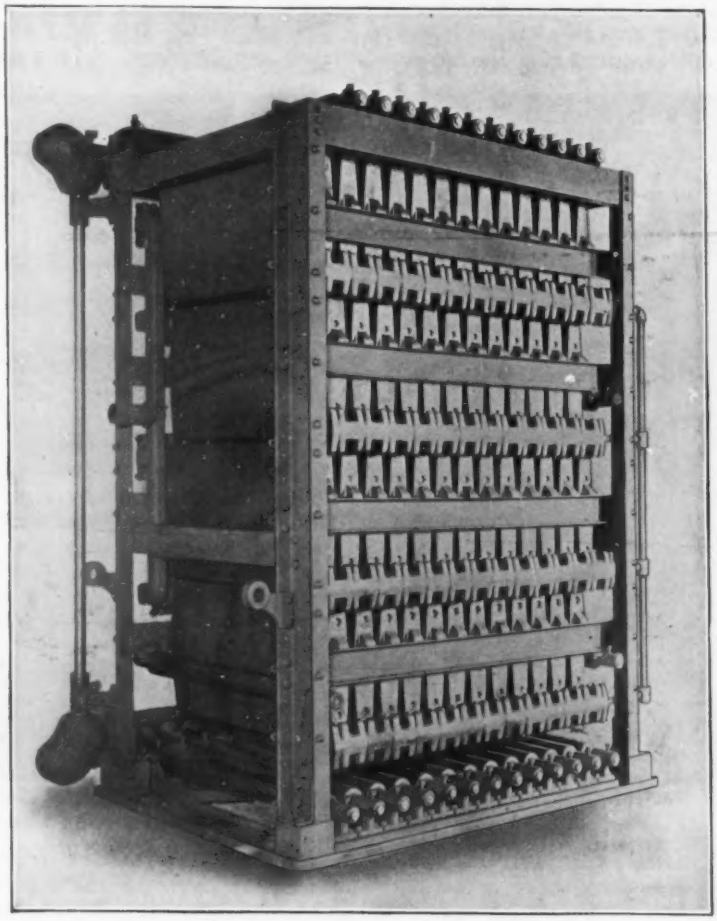

FIG. 2.

row of cells. The steam enters each row through a pipe shown at the left of Fig. 2; the drip pipe is seen at the right.

The manner in which the cloth passes from the cells is shown by the cross section of two rows of cells at Fig. 4. Entering at the upper left hand corner the cloth passes down touching the first plate lightly. It is then carried over the first lower guide roll, from which it passes upward, touching the first lower plate on one side and the first upper plate at the other. This operation is repeated until the cloth emerges from the machine at the upper right hand corner as shown, having traversed all the cells.

The guide rolls are driven positively and the cloth is carried by them over and in contact with the cells, but without being under any tension. By this arrangement nearly all the heating surface is covered by the cloth. It has been estimated that in a 50-cell dryer the heating surface not covered amounts to only 200 square feet, as compared with 1,000 square feet on a 41-can dryer. The heat from the portion of the cell not covered, instead of being diffused through the room, is confined in the machine and by means of a circulation of air is made to do its part in the work of drying. The circulation of air is maintained by a fan or an exhauster.

The difference in the temperature of a can and cell dry room is well illustrated by the fact that in one room containing three 50-cell dryers, doing the work of 120 copper cans, it was found necessary to instal steam radiators to raise the temperature in order to make the room comfortable for the operatives during cold weather.

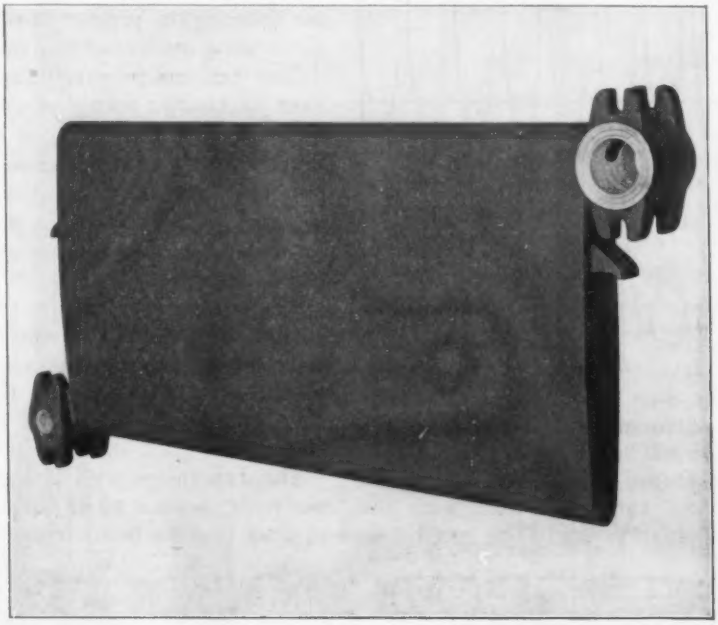

FIG. 3.

Each of these three machines occupies a floor space of 7 by 5 feet, a total of 105 square feet for the three dryers. The work they are doing previously required three 40-copper can machines, each 43 by 6 feet, a total of 775 square feet for the three. The difference in the floor space occupied by the two types of dryers is illustrated at Fig. 5. This shows a cell and a can drying machine with the same amount of surface in contact with the cloth. The builders of the cell dryer state that their 3-string dryer could be easily set on a 9-ft. by 12-ft. office rug, although the drying capacity is equal to that of a 3-string

can machine 70 feet in length and having sixty-two 23-inch cans.

The cell machine has no stuffing boxes, buckets, air valves or drip pans, and only two simple steam connections. The expense

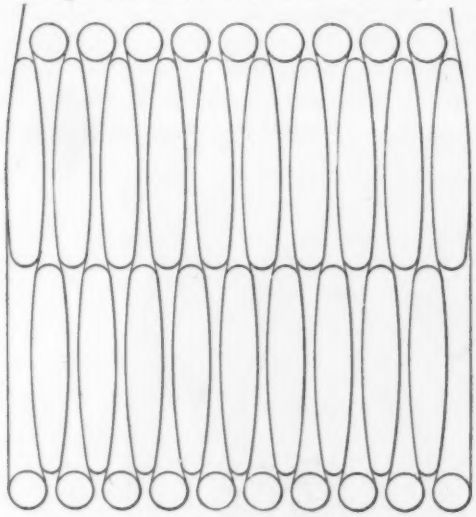

FIG. 4.

for packing is thus eliminated, and repairs reduced to a minimum. It is stated that the product of the cell machine is much larger in proportion to the floor space, steam and power consumed and labor than with the ordinary methods of drying. The speed with if arranged end to end, would occupy a length of nearly 500 feet. The cell machines, however, require a total space but 80 feet in length. A cell machine is also in operation at Manchester, Eng. The cell machine has been thoroughly tested on all grades of cotton goods running from 12-ounce duck to 30-yard muslin with entire success. It is now drying a wide range of corduroys, which are very difficult to dry on account of the close and peculiar texture which makes it impossible to bring the ground fabric in contact with the heating surface of any machine.

The cell machine is adapted for drying yarn in chains, requiring only the addition of two guide rolls and peg racks. When a dryer is to be used altogether for yarn, special cells are used provided with shallow grooves. With these cells, peg racks are unnecessary, as the chains are guided altogether by the grooves.

The cell dryer is built for one, two or three strings, as desired, and is adapted for starched, filled and pile goods. The cells can be arranged so that only the back of the cloth comes in contact with the heating surface.

The experience with this machine in various mills shows it to be adapted for all kinds of work, and the builders invite any manufac-

FIG. 5.

which the cloth is run depends, of course, upon the fabric. We recently saw a 50-cell machine drying 100 yards of 2 1/2-yard cloth per minute. Cell machines are running in three of the leading New England print works, doing the work of 440 dry cans, which turer who has doubts as to whether the cell machine will do his work to correspond with them. They are confident that in every case they can demonstrate the efficiency of the cell machine, not by argument, but by evidence.

## THE E. & B. SPINNING AND TWISTING SPINDLES.

More than half a century ago, in 1849, Easton and Burnham began the manufacture of spindles at Pawtucket, R. I. They have successfully carried on this branch of manufacturing since that time and have had a large experience in making a great variety of spindles for cotton, wool and silk. Much of their success in the manufacture of these spindles has been due to the fact that their

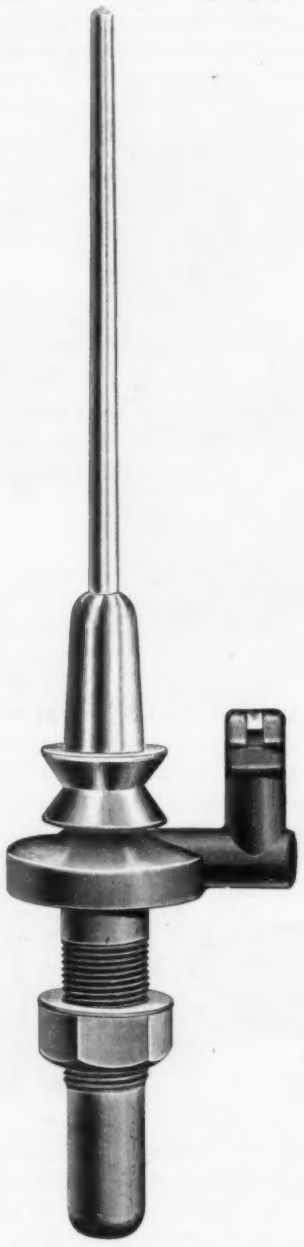

FIG. 1.

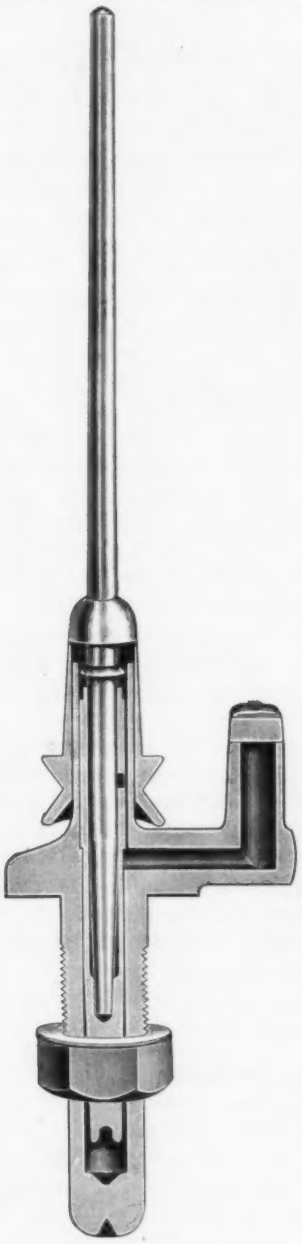

FIG. 2.

employees have been with them for many years, in some cases the third generation is now engaged in the manufacture of their spindles.

The E & B spinning spindle is shown at Figs. 1 and 2, and is specially adapted for high spindle speed, that is, not less than 10,000 turns per minute. It has three parts, the blade with whirl attached, the bolster and the base. The blade is made of high grade crucible steel of special composition and is forged and finished to produce great stiffness. When being tested the blade is placed in a machine in bearings located the same as those in which it is designed to run. Pressure is then applied to the top end by means of levers and weights, and the deflection is measured to the hundredth part of an inch. The bolster provides the two bearings in which the steel blade runs. The light variation between the outside of the bolster and the inside of the base, with the film of oil between, gives the essential cushion against vibrations. The bolster is provided with ducts against circulation of oil. The base holds the bolster and is also an oil reservoir. A spout in the side makes it convenient to refill with oil without removing the band or raising the spindle.

The E & B twister spindles are similar in construction to the spinning spindle, although, of course, much heavier in design, in order to stand the greater strain. The twister spindles are built in several styles to accommodate a wide range of work. Some of the spindles are supplied with a knee brake which is also a doffer guard.

In addition to their line of spindles the Easton and Burnnam Machine Co. build machines for spooling from spinning or twister bobbins, cops and skeins.

**Self Feed for Cards.** C. Oswald Liebscher, Dresden, Saxony. An improved self feed for cards, the principal feature of which consists of a new comb for stripping the front of the apron. It is claimed that it can be regulated to suit different materials.

There are thirty-two varieties of sheep, of which the Ovis aries or domestic sheep is the most important and is found to a greater or less extent in every country in the world.

## THE JOHNSON FRICTION CLUTCH.

The accompanying illustrations show the Johnson friction clutch, which is manufactured in various forms and sizes by the Carlyle Johnson Machine Company, of Hartford, Connecticut. It will appeal at once to manufacturers of textiles and textile machinery

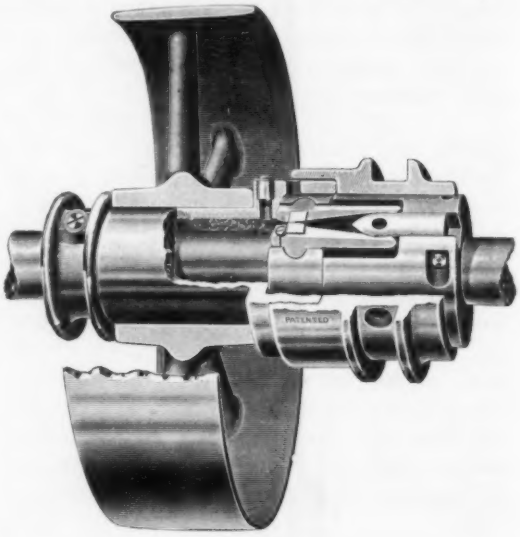

FIG. 1.

who are large users of friction clutches.

This one is very compact, powerful and neat, having no projecting parts to cause accidents and, as all the working parts are enclosed, they are kept free from dirt.

The details are so clearly shown here as to

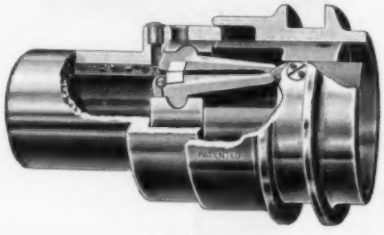

FIG. 2.

require but the briefest explanation. The body fastened to the shaft carries a split ring in which are inserted a pair of levers. A sliding wedge which is operated by means of the shipper forces the ends of the levers apart, and so expands the split ring against the inner wall of a friction cup, which is

formed at the end of a sleeve on which can be mounted solid or split pulleys, cones, gears, etc.

The leverage is such that but little pressure is required to operate the clutch. Adjust-

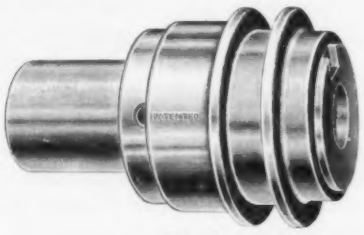

FIG. 3.

ment is made as required by means of a screw which shifts the two hardened tool steel blocks carried at the inner ends of the levers. The adjusting screw is readily reached by a screw driver through a hole in the friction cup.

The Johnson clutches are made both single

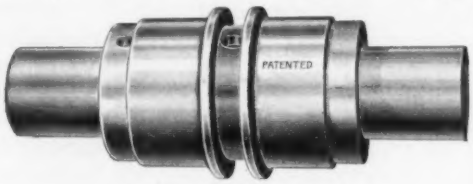


FIG. 4.

and double, as shown by cuts, the double clutch being for two speeds or for forward and reverse motion, attained by crossing the driving belts or by back gearing.

the single clutch. Fig. 4 shows the exterior of the double clutch. Fig. 5 shows the modern method of running a group of machines direct from a line shaft by using friction clutches instead of having separate counter shafts for each machine, these clutches being well adapted for this purpose.

The saving this system means in power, belting, pulleys, etc., can be readily appreciated; in addition the room is made much lighter and cleaner. Being nicely balanced these clutches work well at any speed; where very high speed is required a self-oiling bronze bushing in the sleeve is recommended. The clutches are well made from the best materials, and have but very few parts, each being made interchangeable. They have been adopted by many of the leading manufacturers, the most severe tests proving them to have great power and superior wearing qualities. There are many drives in textile mills where frictions can be used to great advantage, and we advise manufacturers to investigate the Johnson clutch, which has proved its merit by extended use under the most difficult conditions.

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**Open Shed Jacquard.** Samuel Dracup, Bradford, England, is placing on the market an open shed jacquard motion which is said to give very good results. The only alteration consists of an additional grid, a modified bottom board and a new form of link.

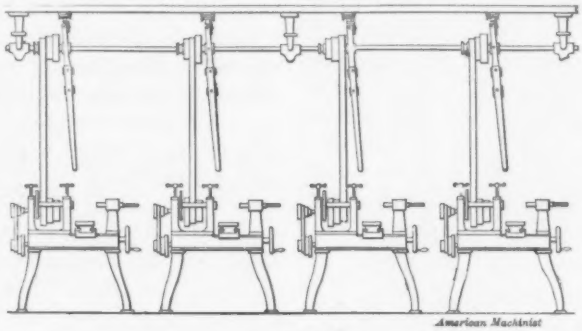


FIG. 5.

a pulley mounted on its sleeve. Fig. 2 shows it disengaged allowing the sleeve to run free.

Fig. 1 shows the single clutch engaged and Fig. 3 shows the perfectly smooth exterior of

**Hosiery Knitter.** W. Spiers, Leicester, England, is placing on the market an improved type of the X L knitter which is full automatic.

# Dyeing, Bleaching, Printing, Etc.

## THE PREPARATION AND USES OF THE CHROME MORDANTS.

Chromium in the form of its soluble salts is one of the most useful chemicals to the dyer or textile printer, on account of its properties for fixing many colors and producing shades of the greatest fastness.

The element chromium is not used directly, but is obtained from the mineral chromite, the sole commercial source in the manufacture of bichromate of potassium or sodium, and which form the principal supplies to the dyer and chemical manufacturer.

Chrome alum is another product of importance, and is also used very largely by the manufacturer of chromium mordants. It comes as large crystals, dark violet in color, and very soluble in water which is violet when cold and green when heated. It is used as a mordant for slubbing and for other purposes. It should be always tested for iron, and rejected if it contains any.

Hydrate of Chrome. This substance is prepared from chrome alum, and is used as the starting point for many other substances. It is obtained by precipitating a solution of the alum with ammonia, washing and felting, when it is ready for further use.

Acetate of Chrome. Usually sold as a solution of Sp. Gr. 1.16 (32 deg. Tw.) and also as a solid. The violet solution is always the best for producing steam colors. It is used for fixing alizarine and chrome steam colors. Prepare by dissolving pressed hydrate of chrome in concentrated acetic acid, or by double decomposition of a solution of sugar of lead with one of chrome alum, thus:

| | |
|---|---|
| Water | 30 parts |
| Chrome alum | 37 parts |
| Sugar of lead | 37 parts |

let settle, and draw off the clear solution, dilute to 32 deg. Tw. with water.

Sulpho-Acetate of Chrome is used only in small quantities, and for special colors. As it is difficult to obtain when wanted, the following process for its production is given: Decompose a solution of sulphate of chrome with one of sugar of lead, but not sufficient to carry down all the sulphuric acid. Decant.

Bisulphite of Chrome. Usual strength is 32 deg. Tw. and is much used for padding on account of its easy decomposition when steamed, leaving a uniform deposit of oxide of chrome on the fibres.

It can be made in two ways, one by adding to sulphurous acid, a cream of hydrate of chrome, or by double decomposition of chrome alum with calcium bisulphite, well mixing, and allowing to settle, and using the clear liquid. No iron should be present.

Bichromate of Potash is too well known to receive extended notice here. As it is a powerful oxidizing agent, it finds extended use as an adjunct for many wool colors, not only for mordanting, but for aftertreating. It is also much used for some direct and sulphur colors to "fix" the shade.

As a chemical raw material, it is used to produce chrome yellows, with lead salts, etc.

Bichromate of Sodium. This is cheaper than the above, and possesses all the qualities, but as its composition is liable to change, due, however, only to the absorption of water, it is always sold upon a chemical analysis.

Fluoride of Sodium. A special salt that has taken the place of the bichromate for a number of processes in the dyehouse, especially for mordanting and aftertreating. It is sold in the form of a green powder of uniform composition.

Chromate of Lead. While this product is essentially a pigment, used for its tinctorial value, it is also much used as an assistant in the dyeing of aniline black, where it serves as a developing agent, when it is used as a paste.

Chromium Nitrate is easily made by dissolving the hydrate of chrome in concentrated nitric acid, only the double decomposition of nitrate of lead and chrome alum, al-

lowing to settle, and decanting for use the clear solution. The following proportions yield a good product of 32 deg. Tw.

| | | |
|---|---|---|
| Water | 64 | parts |
| Chrome alum | 19½ | parts |
| Lead nitrate | 17 | parts |

The yield ought to be about 48 parts, containing over 4½ per cent. of chromic oxide.

Nitro-Acetate of Chrome. Is much used for preparing steam colors on account of the fastness obtained. The following formula gives the best product as determined by the writer after many trials of all similar products upon a wide range of colors.

| | | |
|---|---|---|
| Water | 28 | parts |
| Bichromate of potash | 18½ | parts |
| Nitric acid (conc.) | 21 | parts |
| Glycerine | 5½ | parts |
| Acetic acid | 27½ | parts |

Chromate of Chrome. This is a special mordant used for cotton padding, but its manufacture by the consumer is difficult, and results are very irregular. It is best obtained by purchase.

Chlorate of Chrome. This mordant finds wide application in cotton printing, and also as an oxidizing agent for aniline black.

It is made from chrome alum by decomposing with a solution of chlorate of barium, according to the following proportions:

| | | |
|---|---|---|
| Chrome alum | 16 | parts |
| Barium chlorate | 25½ | parts |
| Water | 64 | parts |

The clear solution has a density of 1.125 (25 deg. Tw.). For many purposes a basic chromium chlorate is desired, and is prepared by taking

| | |
|---|---|
| Chlorate of Chrome (25° Tw.) | 92½ parts |
| Chromium hydrate paste | 7½ parts |

Sulphate of Chrome. This is seldom used directly as a mordant, but rather as a source of chromium in the preparation of other mordants. It should always be tested for iron.

Chloride of Chrome. This is best obtained by dissolving hydrate of chrome in hydrochloric acid until the acid is saturated, or by double decomposition of calcium chloride and sulphate of chrome. A very good product is obtained by digesting bichromate of potash with bran in the presence of hydrochloric acid, using the following proportions:

| | | |
|---|---|---|
| Bichromate of Potash | 21 | parts |
| Bran | 4½ | parts |
| Hydrochloric Acid (Conc.) | 18 | parts |

and, after the reduction has progressed, further quantities of the acid, amounting to 34 parts. Then add

| | | |
|---|---|---|
| Sodic Carbonate | 6 | parts |
| Water | 12 | parts |

A basic chloride is obtained by adding hydrate of chrome to the normal chloride until no more will dissolve.

Sulphocyanide of Chrome. Obtained by the double decomposition of sulphocyanide of barium and chrome alum, the clear solution only being used. It is used for silk printing, and also as an assistant in cotton calico printing.

Oxalate of Chrome. The solution is made by dissolving the hydrate in oxalic acid, and is much used in the printing of wool as a mordant.

Alkaline Chrome Mordant. A special mordant used for cotton padding, and afterwards to be discharged with citric acid or lime juice. It is prepared by adding a solution of soda lye and glycerine to acetate of chrome. It may also be prepared by dissolving freshly prepared hydrate of chrome in soda lye, but the product that contains the glycerine is held in much higher favor.

Other chrome mordants are used, but those given here are the best known, and yield the best results. In making mordants, it is best to make calculation for quantities not less than five gallons where they are used only in small quantities; but when any mordant is used in bulk all proportions should be based on the basis of 50 or 100 gallons.

When any particular mordant is a specialty of a certain mill, it is always best for it to be prepared at the place where it is used, thereby securing uniformity of product, and every advantage in the way of strength and cost.

---

Under favorable conditions raw silk will absorb 30 per cent. of its weight in moisture and still appear dry. The amount of moisture legally permitted is 11 per cent.

## FAST COLORS FOR BLANKET HEADINGS.

In the manufacture of woolen blankets it is well known that certain colors are used that have been dyed upon the woolen yarn and woven into the blanket in the form of stripes near the ends for either ornament, or to distinguish the grade of goods.

As a general rule the colors used are very simple, consisting essentially of blue, pink and yellow. While other colors have been used for special purposes, they cannot be regarded as trade standards.

The most essential quality that these colors should possess is that of resisting fulling and bleaching, so that during either process the color will not bleed into the undyed portion, nor be so reduced in shade during bleaching that it would be apparent.

Usually it is the custom to bleach the blankets in the sulphur house, but of recent years it has been the custom in quite a few mills to use either peroxide of hydrogen or peroxide of sodium, the idea evidently being that the white produced on the blanket body is more permanent. It has been observed, however, that when some blankets have been bleached with peroxides, the color of the headings has been acted upon so that the color as dyed has been entirely destroyed.

In the first place, it is the best practice to scour the yarn to be dyed with colors for heads very thoroughly, and to wash well in several changes of water so as to make sure that no grease or oil remains behind. While many dyers will say that they never have any trouble in dyeing the yarn, even if not absolutely free from grease or oils, yet traces of such impurities are known to influence the action of the peroxide on the color.

These remarks apply with equal force to the cleansing of the blanket after being fulled, etc.

In dyeing yellow, the dyer may choose between Tartrazine, a straight acid dye producing bright and very fast shades, or some of the acid chrome yellows, colors that are very fast, but not quite as bright as the former.

Tartrazine is dyed from an acid bath containing for a good full shade about 1 to 1 1/2 per cent. of color, and 4 per cent. oil vitriol, and 10 per cent. of Glauber's Salt. Dye at a boil, turn to even the shade and until the bath exhausts. Wash well and dry.

The acid chrome colors are similar to alizarine colors, and are dyed either upon mordanted wool, or else in a bath with the chrome.

The following formulae gives good results and fast shades:

| | |
|---|---|
| Dyestuff ..... | 2 per cent. |
| Acetic Acid ..... | 3 per cent. |
| Bichromate of Potash .. | 1 per cent. |

Have the bath boiling, and feed the dyestuff to the kettle only as fast as the wool takes it up. Lift, wash and dry.

The dyer has also resource to either extract of Weld or Persian berry liquor, both of which will give fast yellows.

Red is dyed upon blanket heads with either a scarlet of the Azo group, or as a pink, in which case Rhodamine is used. Neither of these two colors is absolutely fast to peroxides, and the only way for the dyer to do is to dye a series of shades, using various percentages, and let them go through the peroxide bath in the regular way, and adopt the one that is reduced to the proper shade after washing and drying.

Blues can be dyed with the Nicholson Blues, but as the bleaching must be done in an alkaline bath, there is a possibility that the final shade will be slightly weakened. This can be overcome, however, by passing the bleached blankets through a very weak acid sour. This operation not only imparts to the blankets a good "feel" or "handle," but will bring out the color.

Some of the acid blues, that is, blues that dye wool as an ordinary acid (Azo) color, will stand the action of the peroxides for quite a long time, but it is always an uncertainty to select a color that will meet this rather severe test.

There are very few colors that are not acted on by peroxides, in fact it is doubtful if any one color can be found that is absolutely proof against its action, so that the suggestion made above is the only safe one to follow, that is, dye up a series of shades from the

fastest colors available, pass through the bleach bath, and adopt the shade of the one that afterwards matches the standard.

It is suggested that in all cases the yarn to be dyed be perfectly clean, and that the whole blanket when ready to be bleached be equally well cleaned free from all grease so as to allow the wool to obtain the maximum bleach in the shortest time, and thus preserve the colors as dyed.

## NOTE ON THE DRYING OF WOOL.

While the operation of drying wool as it comes from the washers is a remarkably simple one, yet there have been traced to it a number of defects that have been found in other processes.

As the wool comes from the scours, it is seldom free from every trace of soap and alkali, and when it is taken to the driers, unless the temperature and moisture is watched and kept under control, there is likelihood of over-drying, and to such an extent that the fibre loses its vitality, and the small amounts of soap on it suffer decomposition, with the result that fatty acids are set free and become fixed in the fibres so firmly that they are not to be removed by the subsequent scouring operations.

Of course such wool will not dye properly, as its property of taking up color from the dyebath is weakened to a more or less extent, and when such wool is mixed with wool that has been properly dried, it produces mottled effects.

Perfectly dried wool is that which has the excess of moisture driven out of it, but it does not imply that the fibre should be bone dry and devoid of the natural content of moisture, usually 15 per cent., that goes to make up the normal fibre.

Excessive drying has another disadvantage. When the dry wool from the driers is taken to the picker house and lubricated, it takes up a much larger quantity of the oils, while the normally dried wool—that which contains its proper amount of moisture—is only superficially lubricated, and without any subsequent ill effects. This becomes apparent when such wool is made into yarn and then scoured for drying. The excessively dried wool, having taken up more oil, takes less color in the dyebath than the other wool and suffers by comparison.

Over-drying also causes the yarn to become brittle, and when woven into cloth, will not take the same degree of finish as other cloths.

As a rule it is unsafe to allow the temperature of the driers to exceed 125° F. and it is best to observe that it is not temperature alone that effects the drying, but that it is the capacity of the heated air in the drier to absorb moisture from the wet wool.

If heated air is saturated with moisture, it is unfit for drying, and it is only by supplying air at a proper temperature and for the proper time to take up the "wetness" of the wool. Over-drying is usually due to a mistaken notion that dry heat is not injurious, but this can be easily demonstrated by taking two parallel skeins of woolen yarn, drying one at a high temperature or for a long time, and giving the other the proper time on the machine, and then dyeing them at the same time.

This note is published in view of experiments recently made with the object of locating a cause of uneven dyeing, the essential features of which, however, will be published in an article on wool drying in our next issue.

## THE MISTAKE OF SILK WEIGHTING.

*BY DAVID DENIER.*

The common custom of heavily weighting silk, practiced for so long, has been, in the estimation of the best authorities, the greatest factor in causing the dulness of the silk business for a number of years.

Many manufacturers in the past have weighted their silks to such a high point that they were actually selling tin and other weighting materials instead of silk, and for the price of silk. When silk is bought in the raw state at 16 ounces to the pound and then boiled off to about 12 ounces, and then "dynamited," i. e., blown up to 30 ounces, one would hardly say it was silk, but rather weighting material.

Yet such a condition has existed and does

exist even now to a greater or less extent. The consequence has been that the woven cloth "cut," without any apparent cause, scarcely lasting through a short season. Dame Fashion naturally turned away from silk to cotton and wool; and the cotton and woolen manufacturers were not slow to take advantage of these conditions, placing on the market some very catchy goods. Within the last year or so the silk people have begun to wake up to the fact that the queen of fabrics was not having the demand it should have. This led to various enquiries as to the cause of the trouble, when the conclusion was reached that great harm was being done by too much weighting. Lately the fashions have been calling for more silk for all round wear than has been the case for several years, and fortunately the call has been for better qualities, too.

"Less tin and more silk" is heard quite often now, and with less loading or weighting, naturally more silk must be used. Because the weighting of silk is condemned it is not to be supposed that only pure dye is demanded.

Many pure dye silks are hard to work, causing considerable trouble from the winder to the weaver; whereas silk weighted to 16/18 or 18/20 ounces works much better and gives as good results in the appearance of the cloth as is required at the present day with the styles changing continually. There is a vast difference between the silks our grandmothers used to wear and those made in recent years.

A sample of taffeta, made a few years ago and recently shown the writer, counted 3 by 6 reed, 96 picks, and was so thin and wiry that it scarcely looked like a piece of silk. Compare the above with the taffetas now being made: 4 by 70 reed, 108 picks, just enough weight in the organ to make it run well (19 ounces), and the tram pure dye. Goods like the latter fabric are like a board, capable of being worn two or more seasons.

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Artificial indigo is made from orthonitrophenylpropiolic acid by heating with caustic soda solution in the presence of a reducing substance, such as glucose.

## New Color Cards.

Indocyanine; Berlin Aniline Works, New York City.

Four samples of woolen piece goods showing 3 1/2 and 5 1/2 per cent. dyeings with Indocyanine B F and 2R respectively.

Indocyanine 2R; Berlin Aniline Works, New York.

Three samples showing chlorinated wool and slubbing printed with Indocyanine 2R.

Crystal Violet P; Farbenfabriken of Elberfeld Co., New York City.

One sample of cotton yarn and one of woolen yarn dyed with Crystal Violet P, and one sample of cotton piece goods printed with the same color.

Azo Acid Violet A L; Farbenfabriken of Elberfeld Co., New York City.

Two samples of woolen piece goods dyed with 1 and 2 per cent. respectively of Azo Acid Violet A L.

Diamine Green C L; Cassella Color Co., New York City.

A card showing a range of six shades produced on cotton, half wool and half silk with Diamine Green C. L.

Katigen Khaki G; Farbenfabriken of Elberfeld Co., 40 Stone St., New York.

Three samples of cotton yarn dyed with different percentages of Katigen Khaki G extra.

Benzo Fast Yellow 5 G L; Farbenfabriken of Elberfeld Co., 40 Stone St., New York.

Two samples of cotton yarn dyed Benzo Fast Yellow 5 G L.

Katigen Yellow Brown G R; Farbenfabriken of Elberfeld Co., 40 stone St., New York.

One sample of cotton yarn dyed with 2 per cent. and one dyed with 12 per cent. of Katigen Yellow Brown G R Extra.

Neutral Wool Black; Cassella Color Co., 182 Front St., New Nork.

Two samples of wool and cotton piece goods and two of wool and silk dyed with different percentages of Neutral Wool Black B and G.

Fast Light Orange G; Farbenfabriken of Elberfeld Co., 40 Stone St., New York.

A sample of woolen piece goods dyed with 3 per cent. of Fast Light Orange G.

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**Jacquard Motion.** T. Rothwell, Stockport, England, is bringing out a cross border motion for jacquard looms.

**Mercerizing Apparatus.** Alfred Wyser, Aaran, Switzerland, has recently brought out a mercerizing machine for yarn.

# DYE RECIPES.

**The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation Subscription price for the Dyers' Supplement $1.00 per year**

Recipe No. 177.

## Brown on Cotton Yarn.

Oxydiamine Brown R N undeveloped on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Oxydiamine Brown R N.
(Cassella Color Co., 182 Front St., New York.)
40 lbs. Glauber's Salt (Crystals).
2 lbs. Soda Ash.

Enter yarn at 180° F. and dye at a boil for one hour.

Oxydiamine Brown R N undeveloped gives a pleasing shade of reddish brown, but when coupled with Paranitraniline C it gives a much darker brown (see No. 187), possessing somewhat improved fastness to washing.

Recipe No. 178.

## Yellow on Cotton Yarn.

Pyrol Yellow G on 100 lbs. cotton yarn. Prepare the dye bath with

10 lbs. Pyrol Yellow G.
(C. Bischoff & Co., 88 Park Pl., New York.)
20 lbs. Sodium Sulphide Crystals.
5 lbs. Soda Ash.
50 lbs. Common Salt.

Enter yarn at 180° to 190° F. and dye just below the boil for one hour, keeping the yarn below the surface of the dye liquor as much as possible.

Pyrol Yellow G gives a shade of yellow which possesses excellent fastness to light and washing.

Recipe No. 179.

## Burnt Orange on Cotton Yarn.

Oxydiamine Brown G (undeveloped) on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Oxydiamine Brown G.
(Cassella Color Co., 182 Front St., New York.)
40 lbs. Glauber's Salt (Crystals).
2 lbs. Soda Ash.

Enter yarn at 180° F. and dye at a boil for one hour. Oxydiamine Brown G (undeveloped) (see No. 188), gives a remarkably bright shade of burnt orange. When coupled with Paranitraniline C it gives a much darker brown which possesses somewhat improved fastness to washing.

Recipe No. 180.

## Orange on Worsted Yarn.

Fast Light Orange G on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Fast Light Orange G.
(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)
10 lbs. Glauber's Salt.
4 lbs. Sulphuric Acid.

Enter at 170° F. and dye at a boil for one hour.

Fast Light Orange G dyes very evenly and possesses excellent fastness to light. It is also fast to alkalies, stoving, acids, perspiration, ironing, and does not tinge white cotton checking threads.

Recipe No. 181.

## Pink on Cotton Yarn.

Rhodamine 4 G on 100 lbs. bleached cotton yarn. First mordant the yarn by working in a warm bath containing

2 lbs. Tannic Acid.

Wring without washing and fix tannin by working for 20 minutes in a cold bath made up with

1 lb. Tartar Emetic.

Then dye in a bath made up with

¼ lb. Rhodamine 4 G.
(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)

and

½ lb. Acetic Acid.

Wash well and dry.

Rhodamine 4 G produces very clear shades on cotton yarn and pieces. It possesses good fastness to alkalies, washing, and acids.

Recipe No. 182.

## Blue on Woolen Yarn.

X L Blue on 100 lbs. woolen yarn. Prepare the dye bath with

4 lbs. X L Blue.
(Read Holliday & Sons, Ltd., 7 Platt St., New York.)
10 lbs. Glauber's Salt.
3 lbs. Acetic Acid.

Enter lukewarm, raise to a boil and continue 45 minutes.

This is a very easy leveling dyeing color.

Recipe No. 183.

## Brown on Cotton Yarn.

Compound Shade on 100 lbs. cotton yarn. Prepare the dye bath with

5 lbs. Pyrol Yellow G.
5 lbs. Pyrol Brown G.
(C. Bischoff & Co., 88 Park Pl., New York.)

20 lbs. Sodium Sulphide (Crystals).
5 lbs. Soda Ash.
50 lbs. Common Salt.

Enter yarn at 180° to 190° F. and dye just below the boil for one hour, keeping the yarn below the surface of the dye liquor as much as possible.

When combined in this proportion Pyrol Brown G and Pyrol Yellow G give an excellent shade of brown of remarkable fastness to light and washing.

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Recipe No. 184.

**Blue on Worsted Yarn.**

Indocyanine 2 R pat. on 100 lbs. worsted yarn. Prepare the dye bath with

15 lbs. Ammonium Acetate

or

5 lbs. Ammonium Sulphate. (If acid in reaction add a little ammonia.)

Boil up the bath, cool a little and add

3½ lbs. Indocyanine 2 R pat. (Dissolved in hot water.)
(Berlin Aniline Works, 213, 215 Water St., New York.)

Enter the material, bring to a boil and dye at a boiling temperature for one hour.

The dye bath does not exhaust completely and if it is not to be used for a second dyeing, it is well to run in a little cold water towards the end of the dyeing and add

3 lbs. Acetic Acid (well diluted).

Indocyanine 2 R pat. possesses excellent coloring and penetrating properties. Its fastness to alkalies, light, acid, and steaming is excellent.

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Recipe No. 185.

**Brown on Cotton Yarn.**

Tetrazo Brown Y on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Tetrazo Brown Y.
(American Dyewood Co., 156 William St., New York.)
30 lbs. Common Salt.

Enter at 180° F. and dye at a boil for one hour.

Tetrazo Brown Y gives an excellent shade of brown and possesses the valuable properties of the direct cotton colors.

---

Recipe No. 186.

**Yellow on Cotton Yarn.**

Direct Yellow G G on 100 lbs. bleached cotton yarn. Prepare the dye bath with

3 lbs. Direct Yellow G G.
(E. M. Thayer & Co., 106 Broad St., Boston.)
20 lbs. Common Salt.

Bring to a boil, enter yarn and dye at a boil for ¾ of an hour.

Direct Yellow G G dyes very evenly, and is not only valuable as a self color, but for shading purposes.

---

Recipe No. 187.

**Brown on Cotton Yarn.**

Oxydiamine Brown R N (coupled with Paranitraniline C) on 100 lbs. cotton yarn. Prepare the the dye bath with

3 lbs. Oxydiamine Brown R N.
(Cassella Color Co., 182 Front St., New York.)
40 lbs. Glauber's Salt (Crystals).
2 lbs. Soda Ash.

Enter yarn at 180° F. and dye at a boil for one hour, rinse well and work ½ hour in a cold bath made up as follows:

2 lbs. Paranitraniline C.
2 gals. boiling water.
6 lbs. Muriatic Acid 33° Tw.

Stir well and when completely dissolved add

4¼ gals. cold water

and when well cooled add

1⅛ lbs. Sodium Nitrite

dissolved in one gallon cold water.

Finally make the whole up to 25 gallons. After working in the above bath the material is washed and finished.

It will be noted that the plain dyed sample before coupling is identical with that exhibited in No. 177, but upon being coupled with Paranitraniline C an entirely different shade of brown results, which is somewhat faster to washing.

---

Recipe No. 188.

**Brown on Cotton Yarn.**

Oxydiamine Brown G (coupled with Paranitraniline C) on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Oxydiamine Brown G.
(Cassella Color Co., 182 Front St., New York.)
40 lbs. Glauber's Salt (Crystals).
2 lbs. Soda Ash.

Enter yarn at 180° F. and dye at a boil for one hour, rinse well and work one-half hour in a cold bath made up as follows:

2 lbs. Paranitraniline C.
2 gals. boiling water.
6 lbs. Muriatic Acid, 33° Tw.

Stir well and when completely dissolved add

4¼ gals. cold water.

When well cooled add

1⅛ lbs. Sodium Nitrite, dissolved in
1 gal. cold water,

and finally make the whole up to 25 gallons.

After working in the above bath the material is washed and finished.

It will be noted that the plain dyed sample before coupling is identical with that exhibited in No. 179, but upon being coupled with Paranitraniline C an entirely different shade of brown results, which is somewhat faster to washing.

---

Recipe No. 189.

**Yellow on Cotton Yarn.**

Flavophosphine 4 G (Conc. New) on 100 lbs. cotton yarn. First mordant the yarn with tannin by working for ½ to ¾ of an hour in a solution made up with

1 to 2 lbs. Tannic Acid

at 160° F., and then allowing it to steep in the gradually cooling bath for several hours, or over night. Then wring without rinsing and work for 15 to 20 minutes in a cold bath made up with

1 lb. Tartar Emetic.

Wash and dye in a bath made up with

1 lb. Flavophosphine 4 G.
(H. A. Metz & Co., 122 Hudson St., New York.)
2 lbs. Acetic Acid

for one hour at a temperature of 140° to 160° F.

Flavophosphine 4 G (Conc. New) gives a yellow which possesses excellent fastness to washing, milling and acids. It dyes level and is serviceable for the production of compound shades in combination with other basic colors. As it is fast to boiling acids it may be used for the production of two color effects upon cotton and wool material.

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Recipe No. 190.

**A "Seasonable Shade" on Worsted Yarn.**

Compound Shade of Brown on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Fast Acid Yellow 2 S.
¼ lb. Fast Acid Blue No. 2.
¾ lb. Fast Acid Scarlet B E E.
(Sykes & Street, 85 Water St., New York.)
4 lbs. Sulphuric Acid.
10 lbs. Glauber's Salt.

Enter yarn at 140° F., bring to the boil in 30 minutes and boil until bath is exhausted.

This popular shade of brown possesses good fastness to light and washing, dyes evenly and penetrates well, and is recommended for the heaviest felts as well as the lightest woolen goods.

The primary colors from which this compound shade is produced were displayed separately in the July, August and September issues of the Dyers' Supplement.

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Recipe No. 191.

**Orange on Cotton Yarn.**

Flavophosphine R (Conc. New) on 100 lbs. cotton yarn. First mordant the yarn with tannin by working for ¾ of an hour at 180° F. in a tannin bath made up with

2½ lbs. Tannic Acid,

and then allowing it to steep in a cooling bath for a few hours or over night.

Then wring without rinsing and work for 15 to 20 minutes in a cold bath containing

1 lb. Tartar Emetic.

The yarn thus mordanted is then dyed in a bath containing

1 lb. Flavophosphine R (Conc. New).
(H. A. Metz & Co., 122 Hudson St., New York.)
2 lbs. Acetic Acid

at 150° F. for ¾ of an hour, and then washed and dried.

Flavophosphine R (Conc. New) gives a dyeing possessing good fastness to washing, milling and light, and on account of their level dyeing properties they are serviceable for the production of combination shades with other colors. As the dyeing possesses excellent fastness to boiling acids they are valuable for the production of 2 color effects upon cotton and wool union goods.

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Recipe No. 192.

**Blue on Worsted Yarn.**

Indocyanine B F pat. on 100 lbs. worsted yarn. Prepare the dye bath with

15 lbs. Ammonium Acetate

or

5 lbs. Ammonium Sulphate. (If acid in reaction, add a little ammonia.)

Boil up the bath, cool a little and add

3½ lbs. Indocyanine B F pat. (dissolved in hot water).
(Berlin Aniline Works, 213, 215 Water St., New York.)

Enter the material and dye at a boil for one hour.

The dye bath does not exhaust completely, and if it is not to be used for a second dyeing, it is well to run in a little cold water toward the end of the dyeing and add

3 lbs. Acetic Acid (well diluted).

Indocyanine B F pat. possesses excellent coloring and penetrating power. Its fastness to alkalies, light, acid and steaming is excellent.

# Mill News.

## COTTON.

### New Mills.

*Conecticut, Norwalk. Work has been completed on the new buildings for Boese, Peppard & Co. and the machinery is being installed. Operations will be started as soon as possible.

*Georgia, Cartersville. The machinery is being installed in the American Pad & Textile Company's plant and operations will soon be started.

*Mississippi, Columbus. The Columbus Yarn & Cordage Co. has started operations in the new plant. They operate 1,600 spindles, manufacturing yarns and cordage.

New Hampshire, Ashland. A. E. Donald & Co. are installing machinery in the Draper & Maynard plant, which they have leased, for manufacturing cotton webbing and tape.

*North Carolina, Greensboro. Work is about to begin on construction of the new buildings for the Etowah Mills, about which particulars have been previously mentioned.

*South Carolina, Greenwood. The machinery (10,752 spindles) is being installed in the No. 2 mill of the Greenwood Cotton Mills. The mill is to be enlarged in the future to accommodate 20,000 spindles. The spinning and carding and looms are from Mason Machine Co.; intermediate machinery, Saco & Pettee. The new mill is to be started about January 1st. J. A. Campbell is superintendent of both mills.

*South Carolina, Marion. The Marion Manufacturing Co., incorporated with capital stock of $100,000, will start operations about February 1st. Work has been started on erection of an addition to building secured. They will manufacture ply yarns, 20s to 30s, and operate 7,000 spindles. W. Stackhouse is president and treasurer of the company and W. K. Davis superintendent. Will use steam power.

Tennessee, Lenoir City. The Dixie Knitting Mill Co. is to increase the capital stock to $250,000 and will change name from Dixie Mills to the Holston Manufacturing Company. They will erect a new mill which is to be equipped with 6,000 spindles for making yarns to be used exclusively in the knitting mills.

*Virginia, Danville. The Dan River Cotton Mills are ready to start operations. This plant is equipped with 43,000 spindles and 1,614 looms.

### Enlargements and Improvements.

*Alabama, Sylacauga. The Central Mills have started installing machinery in the addition recently completed and which will double the present capacity. They expect to have the additional machinery running by the first of January.

Connecticut, North Grosvenor Dale. The North Grosvenor Dale Co. is about to throw out approximately 38,000 mule spindles which they are replacing with ring spindles, from the Howard & Bullough American Machine Co. (Pawtucket).

Connecticut, Willimantic. The Windham Mfg. Co. contemplates making an addition of a weave shed to the plant, for accommodating about 1,000 more looms.

Connecticut, Willimantic. A new boiler house has recently been completed at M. Pollack's thread plant. A new boiler has been installed and general improvements made to the plant.

*Georgia, Columbus. The Georgia Manufacturing Co. has installed about 2,500 spindles in the mill for purpose of making their own yarns. This plant is operated on seamless hosiery, 84 needle goods.

*Georgia, Elberton. The new addition to the Swift Cotton Mills will be used for finishing department.

*Georgia, Thomason. The J. E. Smith Cotton Manufacturing Company is installing 6,000 additional spindles and 200 looms in the plant. They will make bag cloth.

*Kentucky, Maysville. Operations have been resumed in the Maysville Cotton Mills, which have been closed for several months. The plant has been undergoing repairs and additional machinery (including spinning twisting and spooling) installed during the shut down.

Massachusetts, Fall River. The Massasoit Mfg. Co. is to erect a cotton shed, 185 by 70 feet, of wood and sheet iron.

*Massachusetts, Fall River. The Whittenton Manufacturing Company has completed installation of the additional machinery and started it running.

Massachusetts, Fall River. The Granite Mills are to replace their mules with nine (Mason Machine Works) frames of 364 spindles each. The new machinery will be put in operation about January 1st.

Massachusetts, Leominster. The United States Thread Co. has absorbed the Hoffman-Corr Mfg. Co.'s plant at Fitchburg.

*Massachusetts, Lowell. Work has been completed on the extension, 136 by 95 feet, to the Massachusetts Cotton Mills. They are installing 156 Lowell Machine Shop r. f. cards, with drawing and slubbers to match, also Kitson pickers. This machinery will replace some old.

Massachusetts, New Bedford. The Potomska Mill Corporation is to replace the spinning equipment in Mill No. 2 with 25,000 mule spindles from Barlow & Dobson order for which has been placed through Stoddard, Haserick & Richards.

Massachusetts, Southbridge. The Central Mills Co. has been making many changes and improvements to the property. The water power is also to be increased 30 h. p.

New Hampshire, Nashua. An addition, 24 by 36

feet, three stories, is being built to the Jackson Company's plant.

New York, Nichols. The capacity of the Nichols Knitting mills is to doubled. Plant is now equipped with 15 knitting machines, 3 ribbers and 4 loopers.

*North Carolina, Edenton. The Edenton Cotton Mills have completed addition, 98 by 80 feet, two stories, to the plant, and installed 2,240 additional spinning and 1,120 twisting spindles, making total of 8,512 spinning and 1,250 twister spindles. They have space for 2,500 more spinning and 1,250 twisting spindles, which they propose installing next year.

*North Carolina, Raleigh. The Caraleigh Mills Co. have completed new dye plant for sulphur colors and put same in operation.

*Pennsylvania, Wilkesbarre. It is thought tha the new additions to the Wilkesbarre Lace Mills will be running by January 1st.

South Carolina, Anderson. The Gluck Mills are installing an additional number of Howard & Bullough spinning frames and cards in the mill.

South Carolina, Anderson. A number of Saco & Pettee spinning frames and cards are being placed in the Riverside Manufacturing Co.'s plant.

South Carolina, Chester. The Eureka Cotton Mills expect to have the six new (Whitin) spinning frames which they are installing, in operation January 1.

*South Carolina, Chester. The Springstein Mills are installing the additional machinery, 6,048 spindles now in their mill (Whitin spinning frames and cards and Lowell speeders). They expect to have the new machinery ready for operation by the first of the year.

*South Carolina, Chester. The Wylie Mills have placed order for 30 spinning frames, which they propose having running the first of the year.

*South Carolina, Clinton. The Clinton Cotton Mills expect to have their No. 2 mill in operation early in the spring.

South Carolina, Gaffney. The Gaffney Manufacturing Co. has installed 210 additional Crompton & Knowles looms in the plant, giving a total of 1,650 looms in the plant.

*South Carolina, Greenville. The Carolina Mills have just completed a 2-story addition to their mill, in which 160 looms have been installed for manufacturing print cloths. Operations in the new department will start December 1st.

South Carolina, Greenwood. The Grendel Mills are installing brusher and stitcher machines (Curtis & Marble.)

*South Carolina, Rock Hill. Work has been completed on the additional building to the Arcade Cotton Mills and the machinery, 6,000 spindles, will be installed shortly. This will give them a total of 12,210 spindles.

*South Carolina, Union. The Monarch Cotton Mills have completed installation of the additional machinery, 10,000 and 250 looms, in the plant.

**Mills Starting Up.**

*Arkansas, Dardanelle. The Dardanelle Cotton Mills have been purchased by W. A. Price, of Belton, Texas, and T. E. English (New York). The plant, which is equipped with 3,000 spindles, will be put in operation.

*Connecticut, Moosup. Operations have been resumed in the Cranska Yarn Mill, which has been closed for purpose of making extensive repairs.

*Massachusetts, Clinton. The Lancaster Mills have resumed operations on full time.

*Mississippi, Columbus. J. W. Steen is president and treasurer of the Columbus Yarn & Cordage Co., which has been put in operation. Ben N. Love is superintendent and buyer. They manufacture yarns, 4s to 30s and operate 1,600 spindles. Sell direct.

Missouri, St. Louis. Operations have been resumed in the Missouri Cotton Yarn Manufacturing Company's plant after shut down of two months.

New York, New Hartford. Operations have been restarted in the New Hartford Cotton Co.'s mill which has been closed for three months.

*Rhode Island Hope. The mills of the Hope Company at this place and Phenix have begun running on full time. These mills have been in operation but four days a week since early summer owing to the unsatisfactory condition of the cotton market.

*Rhode Island, North Smithfield. The Blackstone Manufacturing Company has begun operations in the new mill.

Rhode Island, Providence. Operations have been resumed in the Oriental Mills which were closed about a vear ago owing to the cotton market.

*Rhode Island, Woonsocket. The National Pile Fabric Co., which has been closed owing to the unsettled condition of the market, has resumed operations.

South Carolina, Edgefield. The Edgefield Manufacturing Co. has resumed operations and will soon be running in full.

*Virginia, Emporia. Operations have been started up in the new plant of the Ashby Cotton Mills, manufacturing yarns. The mill is equipped with 6,000 spindles. T. Ashby Blythe (Philadelphia) is president of the company; W. Samuel Goodwyne, vice-president, and W. T. Tillar, treasurer, and W. N. Brown, general manager.

## WOOLEN.

**New Mills.**

*Kentucky, Salt Lick. The Salt Lick Woolen Mill, incorporated with capital stock of $40,000, expects to start work on new buildings about the first of the year. They will make woolen goods, but have not yet decided upon details. C. C. Johnson is president of the company and M. F. Christian, treasurer.

*Massachusetts, Concord Junction. The Concord Mills is the name under which Edward D. Chapin will operate the plant to be started here. J. A. Gould and R. T. Robinson will also be interested in the plant. A line of mercerized goods will be made. Nixon & Thickens have been appointed selling agents.

*Massachusetts, Pittsfield. The new company in which Messrs. Davies and Mahoney have been mentioned as interested, has been incorporated as the Pittsfield Yarn Company. They will start operations January 1st, with 7 sets cards and 3,000 spindles, making woolen and merino yarns, all sizes. They intend to make custom yarns as well as commission spinning. A dye house will be attached to the mill. Will sell goods direct.

*Massachusetts, Westboro. The Westboro Carpet Co., capitalized at $100,000, has their plant in operation. They make Wilton, Velvets and Tapestry Brussels carpets. S. Nixon is president of the company and Wm. Hogg, treasurer. A dyehouse is attached to the mill. Goods are sold direct. New buildings have been built, viz: 250 by 46 feet, two stories, and one 182 by 108 feet, one story, for bleach and dyehouse.

*New Jersey, Pluckemin. The Glen Rock Woolen Mills Company, recently reported incorporated, with capital stock of $50,000, will operate the plant of the Somerville Woolen Mills at this place. T. C. Hagaman (New Brunswick) is president and general manager of the new company.

*New York, Stockport. The Stockport Fibre Co. has been incorporated with capital stock of $12,000 to manufacture cotton and wool shoddy. Benjamin F. Haigh, Edward Tinker and James W. King, the latter of Stottville, are interested. They will operate the Rossman Mill.

*Ohio, Cleveland. The Ontario Manufacturing Company, recently reported incorporated with capital stock of $50,000, will equip their mill with 2 sets drawing machinery, 6 spinning frames, 4 twisting frames, 1 drum winder and 4 spoolers, for manufacturing worsted yarns.

*Oregon, Bandon. The Bandon Woolen Mills will start operations in their new plant about Feb. 15th, making all kinds of woolen goods. The company is capitalized at $40,000. E. H. Dyer is president; C. Y. Lowe, treasurer, and R. E. L. Bedillion, agent and buyer. A dye house will be attached to the mill. Goods will be sold direct.

Pennsylvania, Chester. The Marion Mills Company has been organized to operate No. 3 Mill of the old Shaw, Esrey & Co.'s plant. Operations will start at an early date. Murphy Bros., of Philadelphia, are interested.

Pennsylvania, Chester. The Penn Woolen Company has recently been organized to operate plant for manufacturing wool shoddies. Four sets of cards have been installed in plant leased at Fourth & Penn streets and two more will be added later. Mr. Harry W. Myers is treasurer of the company and Harvey Lamb, manager.

*Pennsylvania, Latrobe. The Pearce Woolen Mills at Greenville, which were destroyed by fire, are to be rebuilt at this place.

*Pennsylvania, Philadelphia. Several weeks ago we mentioned in these columns that a new spinning mill would be started in the old Callaghan Mills, 60th Street and Baltimore Avenue, Angora. We may now state that the name of the company will be the Lion Yarn Co. The yarns for weaving and knitting purposes will be made. Part of the plant is now in operation with more machinery on the way. The company states that they are not as yet able to give out the equipment of the establishment, but expects to have it in full operation within a short time.

Pennsylvania, Philadelphia. Richard Hall, formerly connected with the Hall Yarn & Waste Mfg. Co., has severed his connection with that company and is about to start up a plant on his own account. Mr. Hall has leased the old Rockhill Mill on Belmont Avenue, West Manayunk, and in it he will operate 416 mule spindles and 3 Garnett shredders on carpet yarns and waste with a capacity of 12,000 pounds per day, selling the goods direct. Mr. Hall will do his own superintending and buying. The plant is expected to be in operation in a week or so.

Pennsylvania, Philadelphia. Arthur Rhodes has just started up in the manufacture of art squares at 2350 Waterloo St. He is now operating but one three yard loom, which he expects to increase as his business warrants.

Pennsylvania, Philadelphia. The Abbott Manufacturing Co., at one time located at Hancock and Somerset Sts., which discontinued business two or three years ago, is again to be started up. The company has placed an order with the Crompton & Knowles Loom Works for 40 looms, which will be set up and put in operation as soon as suitable quarters are secured. They are also endeavoring to secure the lease of a large room at 2628 Mascher St., which will be used as the office and in which they will also run four looms on samples. The company has now many orders on hand and have rented twenty looms of the Clifton Mills Co., where the goods are being turned out and sold through New York. Mr. George Sidebotham will have entire charge of the plant, which will make men's wear.

*Rhode Island, Bristol. The machinery is being installed in the Namquit Worsted Mill and it is expected to have the plant running by December 1st.

*Rhode Island, Pascoag. Work has started razing the ruins of the old Inman Mill by Contractor Fred L. Mathewson, preparatory to rebuilding the plant, which is to be operated by a new company organized as the "Clear River Mills." The main building will be 150 by 50 feet, three stories, with flat roof. The first floor will be used for finishing department; second, weaving, and third, reeling and spooling.

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**Enlargements and Improvements.**

*Maine, Kezar Falls. Work is under way on the addition, 60 by 72 feet, to the Kezar Falls Woolen Mills. The building will be four stories high.

Maine, Sanford. The Sanford Mills Company has purchased three mill privileges on the Mousam River and will build a large stone dam, 40 feet high

from the river bed and 250 feet long above the town line. An iron flume six feet in diameter will extend to still water below, giving an 80 foot head for operating an electric power plant.

Massachusetts, Athol. The Millers River Manufacturing Co. has recently completed erection of a new office building, 28 by 30 feet, also made general repairs throughout the mill. The old office is to be used as a sample room. A shoddy department has also been added to the mill.

*Massachusetts, Fitchburg. The Shirreffs Worsted Co., of North Chelmsford, expect to move into their new mill in this city about December 1st.

Massachusetts, Holliston. The Darling Manufacturing Company is installing a new boiler in the mill.

Massachusetts, Holyoke. The Farr Alpaca Co. will erect a large storehouse on land purchased from the Water Power Co. The old buildings now on same will be removed.

Massachusetts, Lawrence. The Crescent Worsted Company has secured an additional floor in the building where plant is located and will install some spinning frames.

*Massachusetts, Monson. Fred Faulkner has started operating the Lancey Mill, equipped with 3 sets cards and 20 broad looms. The goods are finished at the Home Mill, Stafford Springs.

Massachusetts, Monson. An enlargement is being made to D. W. Ellis & Sons' mill.

*Massachusetts, Pittsfield. The new addition to the Pontoosuc Woolen Co.'s mill is nearly ready for installation of the machinery. It is thought that operations will begin in same about December 1st.

*Massachusetts, South Royalston. A temporary picker house, 24 by 36 feet, has been erected by the Whitney Woolen Co. As soon as arrangements can be completed, a brick building, much larger than the one destroyed, will be built. It is expected to have same completed early in December.

*Massachusetts, West Stoughton. The two-story addition, 85 by 40 feet, to the Stoughton Mills, has been completed. New carding, garnetting and picking machinery has been installed.

New Hampshire, Harrisville. The Cheshire Mills are making improvements to the plant, including new dye house and installation of a 150 h. p. boiler.

New Hampshire, Keene. Work has been nearly completed on new dye house, 60 by 80 feet, two stories, brick, for The Faulkner & Colony Mfg. Co.

New Mexico, Albuquerque. The Rio Grande Woolen Mills have increased the capital stock from $100,000 to $1,000,000.

*New York, Amsterdam. Contract has been let for the erection of new addition for the Shuttleworth Bros. Co., and work started on construction.

New York, Seneca Falls. The Seneca Woolen Mills are installing two new water wheels of 250 h. p. each.

North Carolina, Spray. An addition for dye purposes is under way at the Spray Woolen Mills.

Nova Scotia, Southampton. The Valley Woolen Mills have been organized with capital stock of $15,000. They will operate the present plant of the Valley Woolen Mills, enlarging the buildings, using steam instead of water power, and otherwise increasing capacity. O. B. Schurman and A. S. Filmore are among the incorporators.

*Ontario, Bolton. J. Walshaw & Son will start their mill, which has been rebuilt, early in the new year. The plant will be equipped with 3 sets 60-in. cards and 15 looms. Goods will be dyed and finished at the mill. Will make blankets, white and gray, and horse clothing.

Pennsylvania, Philadelphia. The Philadelphia Felt Co., Ltd., Emerald and Adams Streets, contemplates installing a new electric plant, for purpose of increasing capacity of plant and running double time.

Pennsylvania, Philadelphia. A 30,000-gallon tank tower is to be erected at Indiana Avenue and A Street for Thomas Bromley, Jr., manufacturer of worsted yarns. The plant will be equipped with sprinklers, the tank to supply the water for their use. The cost is estimated at $500.

Pennsylvania, Philadelphia. The Erben Harding Co., proprietors of the Tacony and Fairmount Worsted Mills, at 2416 Spring Garden St., and Tacony, manufacturers of worsted and woolen yarns on the English and French systems on 22 cards and 25 combs, are about to increase their establishment and to that end have leased a part of the building formerly occupied by the old E. H. Godshalk Co. at 23d and Hamilton Sts. The machinery for this new plant has been ordered and is now on the way from Europe.

*Pennsylvania, Philadelphia. William Hepworth & Son, waste and wool shoddies, have leased the large mill and warehouses at 2206-12 Blair Street and 2207-13 Trenton Avenue. The plant, which was partially destroyed by fire recently, has been completely re-equipped. They contemplate adding another garnett machine and some cards.

Pennsylvania, Philadelphia. Messrs. Newbold & Company, for many years located at 3338 Collins St., have removed their establishment to the factory building, two stories and basement, at 1832 East Clearfield St. The building has been remodeled and new machinery added. The company claims to be very busy, operating 65 looms on Smyrna rugs and carpets. Plant is run by steam.

Pennsylvania, Philadelphia. A. J. Cameron & Co., Kensington Ave. and Ontario St., manufacturers of worsted yarns, are about to add one set of drawing and more spinning frames to their already extensive plant.

Pennsylvania, Tunkhannock. Plans have been prepared for new buildings to be erected by the Winola Worsted Yarn Co. on land in close proximity to the mill now occupied by them, in which they will put four more cards and other machinery to follow. The company is manufacturing worsted yarns on the Bradford system with 1,400 worsted spindles, 1 comb and 2 worsted cards, having a

capital of $50,000 and the following officers: D. W. Stark, pres.; C. A. Hungerford, treas., and M. J. Gallagher, supt.

Pennsylvania, West Conshohocken. Work has begun on erection of a new two story brick building for office purposes for the Merion Worsted Company. The one now in use will be moved to one side and equipped as an addition to the mill.

*Rhode Island, Oakland. Work is well under way on new addition to the Coronet Worsted Co.'s mill. The building, which will be 150 by 40 feet, three stories, will be utilized for weaving and dressing and it is expected that same will be ready to start up about Jan. 1st. About 50 looms will be put in.

Rhode Island, Providence. A new addition 60 by 100 feet is under construction to Henry A. Davis & Sons' shoddy mill. The new addition, in which two new garnett machines will be installed, will be completed about March 1st.

Rhode Island, Westerly. New carding machinery and a rotary press have been installed in the Pawcatuck Woolen Mills.

*Tennessee, Athens. The Athens Woolen Mills have begun operation in the new addition which has been made to the plant. They now operate 7 sets cards and 211 looms on wool and cotton mixed jeans.

West Virginia, Martinsburg. Work is nearing completion on an addition to the Martinsburg Worsted & Cassimere Co.'s plant and they expect to have the additional machinery (cards and spinning) installed and in operation in about four weeks.

**Mills Starting Up.**

Connecticut, Putnam. Operations were started in the No. 1 mill of the Putnam Woolen Co.'s plant, closed for two weeks for purpose of making repairs. The entire plant is now running on full time.

*Massachusetts, Clinton. The Nashua Valley Mills has been formed to operate the Clinton Worsted Co.'s plant, which has been purchased. Operations will be resumed in the spinning department in two weeks, and within a short time it is anticipated that the whole plant will be running. William Rodger is president and general manager of the new company, Charles G. Bancroft, treasurer and William Poole, secretary.

*Massachusetts, North Adams. Work has been started in the pattern room of Waterhouse & Buffum's mill.

*Massachusetts, West Millbury. Operations have been started in the Crenshaw Worsted Company. When the plant is running in full about 30 people will be employed.

## KNIT.

For Knitting Mill News, see Knitting Department.

## SILK.

**New Mills.**

*Connecticut, Norwich. Work is being pushed to completion on the new building to which M. J. Green's plant at Paterson, N. J., is to be removed.

*Massachusetts, New Bedford. Twenty-five looms are being installed in the branch mill established here by Johnson Barbour. It is expected that operations will be started in a week or ten days.

*New York, Cortland. Thirty looms have been started up in the Cortland Silk Mill.

*New York, Hornellsville. Machinery is being received for the new plant of the Huguet-Merrill Silk Co. It is expected to have the plant in operation by December 1.

Pennsylvania, York. The Merchants' Silk Co. has been incorporated with capital stock of $5,000 to manufacture silks. John D. Arnold, Charles A. Hawkins and Walter D. Sudick are interested.

**Enlargements and Improvements.**

Connecticut, Danbury. An addition is being built to the Tweedy Silk Mill.

*Connecticut, New London. The new addition to Brainerd & Armstrong Co.'s silk mill is being closed in and will be completed and ready for business in about six weeks. The addition is 170 feet long and four stories high.

New Jersey, Paterson. The Post & Sheldon Corporation has been incorporated with an authorized capital of $100,000. This is undoubtedly an incorporation of Post & Sheldon's mill.

New Jersey, Plainfield. The Watchung Silk Company will instal an electric light plant. A new 30 h. p. engine has been put in to be used as an auxiliary to the 30 h. p. engine already at the mill. They propose having 250 lights.

Pennsylvania, Easton. The Easton Silk Company is to remove to the Easton Boot & Shoe Factory, which they have entirely remodeled, about the latter part of November.

Pennsylvania, Scranton. A new 300 h. p. stationary engine is to be installed in the Meadow Brook Silk Mill of the Sauquoit Silk Mfg. Co.'s plant. The present engine will be repaired and held for emergency purposes.

Pennsylvania, Swarthmore. Bids are to be taken shortly by the Victoria Plush Mill for an addition, 30 by 40 feet, one story.

**Mills Starting Up.**

*Pennsylvania, Erie. Operations have started in the Erie Silk Mills, with 50 looms. They will install 200 more looms as soon as help becomes experienced.

## MISCELLANEOUS.

**New Mills.**

California, San Francisco. Herman Bosbach, formerly with the Golden Gate Woolen Mfg. Co., is to start a plant for dyeing and cleaning garments.

*Massachusetts, Methuen. Joseph D. Price is president and superintendent of the Tekcips Dyeing, Weaving and Finishing Co., reported incorporated recently with capital stock of $60,000.

New Jersey, North Paterson. Scola's Piece Dyeing & Finishing Works, T. Scola, proprietor, have recently been established here. Piece goods are dyed and finished. Use steam power.

New York, Syracuse. The Reed Electrical Cordage Company, incorporated with capital stock of $50,000, will start operations about January 1st. They will manufacture insulated wire, magnet wire and telephone cord. Thomas S. Reed (New Haven) is president of the company. R. E. Benjamin of this city is also interested.

Pennsylvania, Allentown. Work is under way on erection of a new dye house, 100 by 30 feet, one story, frame, for Joseph Pozzi, formerly with Lotte Bros.

*Quebec, Drummondville. It is expected to have the new plant of the Drummond Cotton & Bleaching Company completed and running by January.

*Wisconsin, Albany. The Blackhawk Mills, incorporated recently with capital stock of $25,000, make linen crash.. They have an equipment of 650 flax spindles and 75 looms, using water power. Francis Hickman is president of the company and Wm. C. Van Ness, treasurer.

**Enlargements and Improvements.**

Pennsylvania, Philadelphia. Boiler foundations 66 by 18 feet and a one-story brick building 10 by 33 feet are being built for the new Nicetown Dye Works on C Street above Westmoreland.

Pennsylvania, Philadelphia. The Fairmount Dye Works, 612 to 628 North 24th St., dyers and bleachers of warps and skeins, with a capacity of 15,000 lbs. per day, using 35 dyeing machines, are to double the capacity of their bleachery and to that end are ordering the necessary machinerv.

Rhode Island, Riverpoint. A large amount of new finishing machinery is to be installed in the Clyde Print Works.

Rhode Island, Saylesville. A new storehouse, 200 by 500 feet, four stories, is to be erected for the Sayles Bleacheries. The storehouse and bleachery will be connected by a spur track. It is expecteh to have the new building finished next April.

**Mills Starting Up.**

*Missouri, Jefferson City. Operations have been started up in the twine plant installed in the Penitentiary. The capacity of the plant is 10,000 lbs. twine daily.

## FAILURES AND SUSPENSIONS.

*Georgia, Augusta. The Warwick Mill was sold at auction to satisfy a tax lien. The property was bought in for the city by City Sheriff Henry Morris for $7,100. The property will probably be sold again at auction.

Pennsylvania, Lansdowne. The General Chemical Co., represented by John B. Hannum, made application for receiver for the General Artificial Silk Co., and William I. Schaffer has been appointed. Plant is now in charge of the receiver.

Pennsylvania, Philadelphia. A general assignment for the benefit of the creditors has been filed by the Ponemah Knitting Co., to James and Wm. G. Henry. The liabilities are placed at $15,000, of which $10,000 is due for merchandise.

Washington, Bellingham. The Washington Silk Company, operating two looms on souvenir handkerchiefs, has failed.

## FACTS AND GOSSIP.

Alabama, Florence. The Florence Railroad & Improvement Co. is reported to have sold a factory site to parties who will build a cotton mill to be operated under name of the Florence Cotton Mills Co., with capital stock of $500,000.

California, San Francisco. The Golden Gate Woolen Mfg. Co.'s mill is to be closed permanently in a few weeks.

*Canada, Montreal. The Excelsior Woolen Mills advise us that the plant will be closed about the first of January, the orders on hand being sufficient to carry on work until that time. It is probable that the buildings will be rented for other than woolen mill.

Canada, Montreal. It is reported that there is a movement under foot for the amalgamation of the Dominion Cotton Co., the Merchants Cotton Co., the Montmorency Cotton Co. and the Colonial Bleaching Co.

Colorado, Pueblo. It is reported that a woolen mill with capital stock of $120,000 will be established here for manufacturing blankets and heavy woolens.

Delaware, Wilmington. The Arkansas Cotton Mills Company has just been incorporated in this State. The capital is $100,000 and the incorporators from New York.

Georgia, Acworth. A cotton mill is projected at this place and arrangements are being perfected for erection of buildings, etc. The Acworth Cotton Manufacturing Company has been temporarily organized with Orlando Awtrey, president; J. J. Northcutt, secretary and treasurer and J. L. Lemon, vice president. As soon as $50,000 has been subscribed toward the capital stock of $100,000, work will start on construction.

*Georgia, Tifton. The Tifton Knitting Mills recently destroyed by fire are not likely to be rebuilt.

Germany, Frankfurt. Director Becker of the Vereinigten Kunstseidefabriken (manufacturers of artificial silk) is in America on a business trip to investigate the advisability of establishing a branch factory in the United States.

Maine, Biddeford. The Villa-Stearns Co. has been incorporated with capital stock of $150,000, for purpose of throwing and dyeing silk. John M. Goodwin is mentioned as interested.

*Maine, Gardiner. We have been advised by Howard Corning that he is not going to start the

mill recently secured, but is selling what machinery was purchased.

Maine, Limerick. It is thought that work at the Limerick Mills will be completed and plant running on broadcloth by the first of the year.

Massachusetts, Auburn. The Ettrick Mills has been organized with capital stock of $250,000, under Maine Laws, to operate the plant which has been running under name of the Hogg Carpet & Manufacturing Co. The new name has been taken to avoid confusion with other plants bearing name "Hogg" at Westboro and Philadelphia. William S. Hurley is president of the plant and H. F. Granger, treasurer and general manager. A new double water wheel is being installed.

Massachusetts, Lowell. J. C. Wadleigh has been appointed agent of the Merrimack Mfg. Co., to succeed John W. Peade, resigned.

*Massachusetts, North Adams. Waterhouse & Buffum, formerly operating plant at Blackinton, expect to have their mill at this place in operation by January 1st.

Massachusetts, North Andover. The Davis & Furber Machine Co. has purchased from the American Card Clothing Co., the North Andover plant, which was formerly a branch of its business, but at the time the American Card Clothing Co. was formed, was acquired by the latter concern, but now will be operated directly by its former owners.

Massachusetts, Saundersville. The Saundersville Cotton Mills have started operating the plant on full time.

*Massachusetts, South Royalston. The Geo. E. Whitney Woolen Mills, recently destroyed by fire, will be rebuilt.

Mississippi, Yazoo City. At meeting held recently by the stockholders of the Yazoo Cotton Mills it was voted to issue $100,000 worth of preferred stock.

Nebraska, Kearney. The St. John Manufacturing Company has been incorporated with capital stock of $25,000 for purpose of manufacturing hosiery and suspenders. A. E. St. John, S. S. St. John and L. N. St. John are interested.

New Hampshire, Laconia. The Laconia Stocking Company has been incorporated recently by F. B. Rowe, A. E. Rower and L. C. Marshall. The capital stock is placed at $12,000.

New Jersey, Camden. The Watt Mfg. Co. has just been incorporated with $100,000 capital to manufacture yarns with D. Edgar Coe, Philadelphia, and G. Oswald Colvert as the incorporators. Mr. Coe is now operating the Silk-Lour Mfg. Co., in the Ontario Mills, 2d Street, above Columbia Avenue, where he is manufacturing silk yarns for upholstery goods, chenille cords and knit goods.

New Jersey, Long Branch. It is reported that a silk mill is to be established at this place, provided sufficient help be assured. Geo. E. Poland, chairman of the Manufacturing Committee of the Board of Trade, has matter in charge.

New Jersey, Paterson. The Essex Silk Manufacturing Company has been incorporated with capital stock of $5,000 by Joseph Holtham and John and James Holtham.

New Jersey, Paterson. Miller, Ward & Co., operating mill here and one at Lebanon, Pa., have become the M. P. Weinhard Co., Messrs Miller and Ward having sold their interest.

New York, Albany. The United States & Santo Domingo Knitting Company has filed articles of incorporation at this place, with capital stock of $50,000, for purpose of manufacturing all kinds of fibrous materials in San Domingo. Walter H. Bond (New York), John H. Julia (Brooklyn), and Rafael M. Rodriguez (San Domingo) are interested.

*New York, Canisteo. It is reported that arrangements have been completed whereby a new silk mill will be established here.

*New York, Cohoes. John E. McConnell purchased the Star Knitting Co.'s plant at form of being sold at foreclosure for $1 as a step in the adjustment of the company's affairs, as a preliminary to a reorganization.

New York, Cohoes. The Fitwell Knitting Company has been incorporated with capital stock of $60,000 by David Fuld, Nathan Hatch, Jacob S. Friedman and Walter Buck.

*North Carolina, Burlington. A public sale of the Juanita Cotton Mills will be held December 14th, per order of Judge Long of the Superior Court in the case of J. E. Latham & Co. and other creditors. C. B. Barbee and Frank Daniels are the receivers in charge.

North Carolina, Lincoln. The Lincoln Cotton Mills have been incorporated recently with capital stock of $125,000. John L. White (Jersey City, N. J.,) and Edward A. Johnson (Raleigh) are interested.

Ohio, Cincinnati. The Franklin Cotton Mill Company has been incorporated recently with capital stock of $10,000. Thomas C. Peane and Dudley V. Sutphen are among the parties interested.

Ohio, Cincinnati. Pearce, Atkins & Company's business has been purchased by J. Merrill Wright for $75,000. He has assumed all the liabilities of the company.

Pennsylvania, Birdsboro. Letters of administration have been granted Elizabeth M. Cavanaugh, widow of Wm. M. Cavanaugh, and the plant is being operated under above management, pending settlement of the estate.

Pennsylvania, Huntingdon. The Huntingdon Silk Company has been incorporated with capital stock of $150,000.

Pennsylvania, Lebanon. The Lebanon Textile Company has been shut down for about two weeks, owing to twisting of the main shaft. This also delays starting of the branch mill for the Hawk Knitting Co., to be located in the same building.

*Pennsylvania, Lock Haven. James C. Smith, alderman, has been elected trustee of the Lock Haven Knitting Co., recently declared bankrupt.

Pennsylvania, Philadelphia. Messrs. Smyth & Lyons, one of the new concerns in Manayunk, having been in business about a year, are operating two sets cards and two shoddy pickers on carpet, rug and backing yarns, which they put up in 50

pound bundles and sell direct. Business with them is good.

Pennsylvania, Philadelphia. A notice has been sent out by the Edgewater Print Works, Frankford, to the effect that the partnership existing between William A. Lippincott and Alfred L. Oat, the proprietors, has been dissolved by mutual consent and that Mr. Lippincott will continue the business under the same name. At this establishment cotton piece goods are dyed, printed and finished with a capacity of 50,000 yards per day. Plant is equipped with six dyeing and one printing machine.

Pennsylvania, Philadelphia. The Mobile Cotton Mills of Mobile, Ala., manufacturers of cotton yarns on 10,000 spindles, are about to establish an office in Philadelphia at 107 Chestnut Street, with Mr. A. G. Dunlap in charge. Mr. Dunlap states that much new machinery has been added to the plant in Alabama and they are now very busy.

Pennsylvania, Philadelphia. It is reported that William Grange, for many years well known as a manufacturer of upholstery goods on 24 looms, now located at Kensington avenue and Ontario street, in the Pfingst Mill, is about to close out his plant and retire from business.

Pennsylvania, Philadelphia. The announcement has been made by David Seidmann, Joseph Seidmann, Herman Seidmann and Louis Seidmann, trading under the name of the David Seidmann's Sons Mfg. Company, that company has been dissolved by mutual consent. The business will be carried on in the future by Messrs. Joseph, Charles and Louis Seidmann in the name of David Seidmann's Sons, at the old address, 232, 34-36 North 2d Street, where they are manufacturing fringes, loops, webbing, etc., on 14 broad and 9 narrow looms and 12 braiders which they sell direct.

Pennsylvania, Philadelphia. The "Silk Tip" stockings for infants manufactured by the Fairhill Hosiery Co., 1226 Orkney Street, are meeting with great success with the trade and the company is filled up with orders. The goods are sold direct.

Pennsylvania, Philadelphia. The Integrity Dyeing Co., 406-14 Memphis Street, a recently started company dyeing fast black and colors on cotton hosiery report that they are very busy and have been compelled to double their capacity. Mr. Frederick Fischer, formerly connected with another prominent dye house in this city, is the superintendent and manager of this new plant.

Pennsylvania, Philadelphia. One of the new concerns recently started up in Manayunk is the George E. Hoffman Mfg. Co. at Leverington Avenue and High Street. The company is under the direction of Mr. Tonson, who is operating 36 looms on fine worsted men's wear, the goods being sold through agents and direct.

Pennsylvania, Philadelphia. The Sterling Carbonizing Co., Ltd., located in the Belmont Mills, Belmont Avenue, Manayunk (West) are doing a good business. The company operates 4 pickers, 10 sets cards and 1 carbonizer. Mr. James Lee is the superintendent and Albert Lee the buyer. The production of the plant is sold direct.

Pennsylvania, Philadelphia. An application has been made for a charter by Messrs. Hirst & Roger, carpet manufacturers on 75 looms at 1831 E. Allegheny Avenue, under the name of the Hirst Roger Company, the incorporators being Richard Hirst, Arthur G. Roger, John Thurlow Kommer and Walter Cowdrick.

Pennsylvania, Scranton. A meeting will be held January 10th by the stockholders of the Scranton Lace Curtain Manufacturing Co., for purpose of increasing the capital stock.

*Pennsylvania, Slatington. A petition was presented to the Court by D. G. Dery, Catasauqua, receiver of the Slatington Textile Co., directing that the property be turned over to George W. Kirchwey, trustee in bankruptcy proceedings brought in New York. The property has been disposed of at private sale to Paterson parties for $40,000, who will restart the plant on a more extensive scale.

Pennsylvania, Wyalusing. It is reported that a company is being formed for purpose of erecting a lace mill.

Quebec, La Chute. The Hamilton & Ayres Company has been incorporated with capital stock of $100,000, to take over plant operated by Hamilton & Ayres. They contemplate making extensive improvements.

*Rhode Island, Bristol. J. H. Merrill, for several years agent and general manager of the American Woolen Company's Saranac Mill, has become interested with C. D. Rockwell in the Namquit Mill.

Rhode Island, Cranston. The Robert Reoch, formerly with the S. H. Greene & Sons' plant at Clyde, is reported to have secured an interest in the Cranston Print Works, and will take an active part in the management of the works.

# Personals.

**Cotton.**

Charles R. Chase, now in charge of the cloth room at the Manchaug Mills, is to return to Millbury, Mass., and take a position in the Cordis Mill. He will take the place of William Nicholas as paymaster and agent's assistant in charge of the cloth room, and Mr. Nicholas will go into the mill to learn the details of the manufacture of cotton goods.

L. W. Powers has resigned his position as superintendent of the Bristol Manufacturing Corporation, New Bedford, Mass., to accept a similar position with the New York Mills, New York Mills, N. Y.

Gus Harper, formerly with the Lime Stone Mill, has accepted a position as boss spinner with the Gaffney Mfg. Co., Gaffney, S. D.

John Ballock is superintendent of finishing department at the Gaffney Mfg. Co., Gaffney, S. C.

J. K. Edwards, boss spinner, is with the Greenwood Cotton Mills, Nos. 1 and 2, Greenwood, S. C. He was formerly at the Steele Mill, Rockingham, N. C.

Arthur Threappleton has accepted the superintendency of the Manetta Mills, Lando, S. C.

E. W. Worth, who has been for past three years connected with the Oxford (N. C.) Cotton Mill Company, has accepted the superintendency of the Chesterfield Cotton Mills, Petersburg, Va.

George Fish, assistant superintendent of the Massachusetts Mills, Lowell, Mass., has been appointed superintendent, to fill the vacancy caused by the designation of Supt. J. C. Wadleigh, who was appointed agent of the Merrimack Mills. Mr. Fish has been in the employ of these mills for six years.

Matthew Winton, overseer of the weaving department in the Glendale Elastic Fabric Co.'s mill at Easthampton, Mass., has resigned to accept a position as superintendent with the Smith Webbing Company of New Haven, Conn. Mr. Winton was with the former company for about 18 years.

Mr. James Ashworth, until recently engineer of the City of Chicago, in the Department of Water Supply, has entered the employ of the Allis-Chalmers Company as salesman in their pumping engine department.

Mr. S. H. Sharpsteen, for a number of years with the General Electric Company as salesman in their New York office, has accepted a similar position with the Allis-Chalmers Company in their New York office.

Mellen K. Smith, superintendent of the Acushnet Mill, New Bedford, Mass., has severed his connection with that corporation, and Charles Taylor, overseer in the Hathaway Mill, is to succeed him. Richard Riley of Fall River, Mass., is to take the place in the Hathaway Mill vacated by Mr. Taylor.

Ephraim D. Baker, an overseer in the Wamsutta Mills, New Bedford, Mass., who recently resigned, was presented by the help under him with a gold watch chain, a gold mounted pipe and a purse of money, as personal reminders of the good feeling which existed between himself and the operatives.

Mr. G. Fred Collins, who has a very extensive acquaintance throughout the East among officials and engineers of large railroad and steel companies, has recently entered the employ of the Allis-Chalmers Company as special representative at their New York office.

O. W. Etheredge has become superintendent of the Warren Cotton Mill, near Graniteville, S. C.

T. R. Bolton is now located at Watchung P. O., Plainfield, N. J., where he has a position.

Mr. John V. Redfield, after some years in the works and in the Chicago sales office of the Westinghouse Electric & Mfg. Co., has been appointed to the sales staff of the Allis-Chalmers-Bullock interests at their Chicago office.

Lewis Dexter, Jr., of Milltown, N. B., has accepted the position of treasurer and manager of the Maginnis Cotton Mill of New Orleans, La.

Mr. Otto Clyde Ross, for several years employed with the Westinghouse Machine Company as engineer and salesman, and lately in the employ of the Hartford Lead, Zinc, Mining & Smelting Company as engineer, has accepted an appointment with the Allis-Chalmers Company as engineer and salesman.

Mr. Chas. F. Adae, for several years in the employ of the Westinghouse Electric & Mfg. Co., Pittsburg, Pa., and lately manager of the Pittsburg office of the C. Lee Cook Company, has been appointed to the selling force of the Allis-Chalmers Co., at their New York office.

Matthew Winton, overseer of the weaving department in the Glendale Elastic Fabric Company's mill, has resigned to accept a position as superintendent with the Narrow Fabric Corporation of New Haven, Conn. Mr. Winton was connected with the former concern for eighteen years.

William H. Rankin, who for the past five years has been manager of the Eagle & Phoenix Mills, Columbus, Ga., will succeed Arthur H. Gulliver as agent of the Boston Mfg. Co., Waltham, Mass.

Thomas H. Webb, for several years superintendent for the Erwin Cotton Mills Company at Durham, N. C., has been promoted to the management of the No. 2 mill of the company at Duke, N. C. C. M. Suther succeeds him as superintendent at Durham.

John Gill has accepted the position of designer with the Riverside Cotton Mills, Danville, Va. Mr. Gill has formerly been with the Arnold Print Works and Winooski Worsted Co.

Arthur H. Gulliver has tendered his resignation as agent of the Boston Manufacturing Company, Waltham, Mass., to take effect as soon as a successor is appointed. Ill health is the reason given for the resignation.

It is reported that Arthur H. Mason will retire as treasurer of the Barnaby Mfg. Co. at the next quarterly meeting and Frederick W. Harley, assistant superintendent and a director, will be appointed as successor.

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**Woolen.**

M. J. O'Connell, late of the Somerville (N. J.) Woolen Mills, has accepted a position as overseer of carding with the Saugus (Mass.) Mfg. Co.

Jonathan Scott of Philadelphia is now employed as overseer of carding on night work at the Seneca Woolen Mills, Seneca Falls, N. Y.

J. Avery Gould, superintendent of the Riverside Mills, Providence, R. I., has resigned to enter the mill business with E. P. Chapin, formerly with American Woolen Company at Boston. They will operate mills at Concord, Mass. John W. Coggeshall, assistant agent of the Washington Mills, Lawrence, will succeed Mr. Gould as superintendent at the Riverside Mills.

A. E. Jones, late of Uxbridge, Mass., has accepted a position as dyer with the Ludlow Woolen Mills, Ludlow, Vt.

John Cullen, formerly of Blackstone, Mass., has been promoted to be superintendent of the Globe Mills at Utica, N. Y.

E. A. Mitchell has resigned his position as overseer with the Graham & Clark Co. at Maple Grove, to take a position as superintendent of a woolen mill in Stafford, Conn.

David A. Haig has been appointed agent of the Anderson Mills, Skowhegan, Me. He has been connected with these mills for over seven years. He succeeds Mr. F. H. Carpenter.

John W. Teale, boss dyer, formerly engaged with the Southwark Mills, Philadelphia, accepted a similar position with the Patchett Worsted Mills, at Keyser, West Virginia.

E. P. Barber, overseer of weaving for the Marston Woolen Company, Skowhegan, Me., has severed his connection with that concern.

George W. Burr, boss of the finishing room and C. E. Johnson, boss carder at the Ludlow Woolen Mill, Ludlow, Vt., have resigned. Mr. Burr will be employed in the Scotia Mill, Woonsocket, R. I. L. B. Jones has been engaged to succeed Mr. Johnson. He comes from Oxford, Me.

Lloyd L. Sykes of Oakland, Me., has taken the place of Joseph F. Illingsworthy as assistant superintendent of the Oneko Woolen Mill, New Bedford, Mass.

John Eastwood has resigned as boss finisher at the Sibley Mill, North Montpelier, Vt.

K. Taubert, formerly at the Gera Mills, Passaic, N. J., has accepted a position as designer with the Fulton Worsted Mills, Fulton, N. Y.

A. E. Dimmock, of South Bend, Ind., is the new superintendent of the Riverside Woolen Company, Stafford, Conn., succeeding Hiram Rathburn.

Charles Heritage has resigned as agent and superintendent of the Norristown (Pa.) Woolen Company.

Mr. W. M. S. Miller, who was in the employ of the Westinghouse Electric & Mfg. Co., in the manufacturing, production, and detail correspondence departments, and until lately in the detail and supply department, covering in all a period of some fourteen years, has joined the staff of the Allis-Chalmers Company with headquarters in Chicago.

N. H. Barrows, who has been overseer in the mill, succeeds the late R. B. McCarthur as superintendent of the Burlington Mills of the American Woolen Co., at Winooski, Vt.

Maurice Herbert, superintendent of the Beaver Brook Mills of the American Woolen Co., Collinsville, Mass., has been transferred to the Assabet Mills of the same company at Maynard, Mass.

J. Harvey Merrill, the agent of the Saranac Mills, Blackstone, Mass., is to retire from the mills, and is to be succeeded by F. H. Carpenter, now agent of the Anderson Mills, Skowhegan, Me.

E. T. Batsford, assistant treasurer of the Globe Woolen Company, Utica, N. Y., has resigned. Mr. Batsford has been associated with this company for forty years, acting as treasurer since the death of Mr. Coffin and up to the time of the purchase of Mr. Middleton's interest.

F. F. Clark, overseer of spinning at Somerville, N. J., for some years past, has accepted a similar position at Winooski, Vt.

A. H. Lange is superintendent of the Guerin Spinning Mills, Woonsocket, R. I.

William Sheridan has been promoted from the position of overseer to be superintendent of the Collins Woolen Mill, Pittsfield, Mass. Charles W. Power, who has been superintendent, will be manager for the same company.

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**Miscellaneous.**

Mr. R. L. Richardson, for a number of years in the Pittsburg sales office of the Westinghouse Electric & Mfg. Co., has become a member of the Pittsburg selling force of the Allis-Chalmers Company.

G. A. Schneebeli of Nazareth, Pa., of the firm of G. A. Schneebeli & Co., edging manufacturers, was elected to Congress for Northampton County on Republican ticket. This is the first time that this county has ever been carried by a Republican candidate.

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**Deaths.**

Benjamin Armitage, for many years a resident of Paterson, N. J., died at his home November 14th. Mr. Armitage was 60 years old and an Englishman by birth. For many years past he had been engaged in the silk waste business and also for a time manufactured stockings.

Agur Castle, aged 76 years, died at Upland, Delaware County, Pa., Nov. 10th. He was manager for the S. A. Crozier & Sons' cotton mills at Upland for 30 years.

James Cooper, overseer in the Hathaway Mills, New Bedford, Mass., died suddenly of heart disease November 12th.

Richard Toomes, Jr., for many years manager of the finishing department in John Dobson's cloth mills, at the Falls of Schuylkill, Pa., died recently of pneumonia, aged 60 years.

Mark Redcliffe, aged 79 years, of Glen Rock, Pa., was stricken with paralysis and died almost instantly. He was probably the oldest cord manufacturer in the United States.

John B. Radcliffe, a prominent business man and one of the managers of the Manantico Bleach & Dye Company, Millville, N. J., drank laudanum at the house of a friend early in the morning of the 17th. Two doctors were summoned, but despite their efforts to save him, he soon expired.

The Hon. John Summerfield Brayton, perhaps the best known, and certainly the wealthiest citizen of Fall River, Mass., died October 31, after an illness lasting many months. He was 78 years of age. He graduated from Brown University in 1851. For many years he has been the pivotal figure in Fall River's financial and industrial affairs, the head of local banking circles, director in all the leading corporations, a leader in antiquarian matters, and altogether one of the most widely respected citizens of this part of the state. His power and influence in the community during the past quarter of a century was very great, but it was always a conservative influence. He was exceedingly painstaking in all of his affairs and careful of the interests of others placed in his charge.

## New Publications.

[Any work noticed under this head can be obtained through the office of this journal.]

Manufacturing Cost; by H. L. Hall; Book-Keeper Pub. Co., Detroit, Mich. Price $3.00.

It is needless to refer to the great importance of accurately estimating the cost of a mill's product. This vital question is treated by Mr. Hall in a very systematic manner, and while he does not deal directly with the textile industry the work will unquestionably carry many helpful suggestions to the textile manufacturer. Following is an abstract of the table of contents: Accounts; mechanical accountants; indexing; costs; expenses; factories; forms; inventories; labor; organization; patents; postage; prices; purchases; supplies; tickets; waste.

The Silk Industry of the World; by Franklin Allen, Secretary of The Silk Association of America.

This is a very interesting review of the silk industry at the beginning of the twentieth century. According to the introduction its object is to trace the development of the silk industry in the various silk producing countries, to describe the process of manufacturing and to indicate the causes and conditions of its progress at the present time. The pamphlet is a reprint from the Encyclopedia Americana, published by the Scientific American, and reflects great credit on the author whose familiarity with the silk industry is well known.

Calender for the Cotton Industry (Kalender fuer die Baumwoll-Industrie 1905); Gerhard Kuhtmann, Dresden, Germany. Price $1.00.

This is a calendar that has heretofore appeared under the name of Calendar for the Textile Industry and contains in addition to the information given in former editions much new matter in the form of tables. The work has been thoroughly revised and will be of great value to all interested in the cotton industry who are able to read German.

German Dyer's Calendar (Deutscher Farber-Kalender) for 1905; A. Ziemsen, Wittenberg, Germany. Price $1.25.

This is a well-bound calendar of convenient form containing diary and appointment blanks for every day in the year. It also contains a large amount of technical information relating to dyeing, including a description of the latest appliances for that and allied processes. There is also an alphabetical list of all the dyestuffs that have been placed on the market since the publication of the preceding calendar, a list of the elements with their atomic weights and the most important combinations employed in dyeing, comparative thermometric and hydrometric tables, also an excellent series of tables giving the percentages of ingredients corresponding to different hydrometric degrees.

Calculating Capacity and Weight of Contents of Tanks and Vats (Anleitung und Tabellen zur Bestimmung des Literanhalts und der Masse) 4 in. by 6 in.; Otto Voigt, Regenwalde, Germany. Price 50 cents.

This little book gives rules and other information for calculating the contents of tanks and vats of various shapes. It contains a chapter on mensuration and numerous tables showing the cubic contents in liters of receptacles of different dimensions. While the aim has been to base all calculations and dimensions on the metric standards, the introductory chapter contains an unusually large list of the different weights and measures now in use in Germany, giving the metric equivalents. The text is in German.

## Business Literature.

Graphite Lubricant; Joseph Dixon Crucible Co., Jersey City, N. J.

A catalogue describing the various uses to which graphite lubricants are applied at the present time.

The Steam Trap; E. M. Nichols, Philadelphia, Pa.

A booklet illustrating and describing the Handy steam trap which is in general use throughout the country and giving excellent results.

Power of the New York Subway; Allis-Chalmers Co., Milwaukee, Wis.

This pamphlet gives a very interesting account of the subway which was recently opened in New York. It describes the power plant, the power being generated by Allis-Chalmers engines and distributed throughout the system by an elaborate arrangement of electric cables.

Finishing Machinery; Grosselin Pere et Fils, Sedan, France. E. A. Leigh, 232 Summer St., Boston, Mass.

This is a large illustrated catalogue of the various finishing machinery built by the firm of Grosselin Pere et Fils, Sedan, and for whom E. A. Leigh, 232 Summer St., Boston, has been recently appointed the American agent. The machinery includes nappers for different classes of goods, steaming and brushing machines, finishing machines for draperies, flocking and emery machines, shears, rotary and hammer fulling mills, burling machines and centrifugal hydro-extractors.

Graphite Lubricants. A new catalogue describing the many famous graphite lubricants manufactured by the Joseph Dixon Crucible Co., Jersey City, N. J.

The introduction deals in a general way with the growth of the graphite industry, the theory of graphite lubrication, the special advantages of flake graphite in contrast to amorphous graphite and the practical relation of graphite to the theory of lubrication. "It is a fact worthy of greatest emphasis that bearings absolutely cannot 'seize' or cut whenever an infinitely thin film of flake graphite coats the friction surfaces. If Dixon's Flake Graphite could do nothing else for the operator of machinery its importance in averting troubles and shut-downs and perhaps disasters, due to the seizure of bearings, cannot be over-estimated."

The book further describes the various lubricating graphites and graphite lubricants of the Dixon Company, including their general uses and the retail prices of the different sized packages. Among them are mentioned Dixon's Ticonderoga flake

graphite, special graphite No. 635, heavy graphite machine grease, waterproof graphite grease, graphite cup greases, axle grease, automobile and cycle lubricants, handy graphite rope dressing, and graphite pipe joint compound.

Copies of this interesting catalogue will be freely sent upon request to the Joseph Dixon Crucible Co., Jersey City, N. J.

5 1/2 by 8 1/2 inches, 28 pages, illustrated, cover in two colors.

## National Association of Woolen and Worsted Overseers.

The 22d meeting of the National Association of Woolen and Worsted Overseers was held at the American House, Boston, Nov. 19. A large number were in attendance and a great deal of interest was shown in the proceedings. The secretary of the beneficiary department, George W. Burr, Woonsocket, R. I., read his report, which was as follows:

"Since my last annual report, submitted Nov. 18, 1903, there has been but one death in this department—that of our esteemed brother, James H. L. Keegan, who died at his home in Uxbridge, Mass., March 5, 1904. The maximum amount of benefit, $100, was paid to his widow or beneficiary, and assessment No. 20 was levied March 18, 1904. One hundred and five dollars and twenty-five cents has been collected on this date. The sum of $8 was paid on assessment No. 19 after the last report, making the total beneficiary fund to date in the treasurer's hands $147.75. Six members have joined this department during the year."

The ballot of officers resulted in the re-election of the present incumbents:

President, T. W. Biddles, Potter Hill, R. I. First Vice-President, S. Walker, Uxbridge, Mass. Second Vice-President, G. W. Gerry, Maynard, Mass. Third Vice-President, T. N. Parent, Franklin Falls, N. H. Secretary, Walter Pickford, Leominster, Mass. Treasurer, Albert E. Jones, Uxbridge, Mass. Trustees, John Thornton, Glendale, R. I.; Elezear Davies, Plymouth, Mass.; Louis Carmark, Providence, R. I. Secretary Beneficiary Department, George W. Burr, Woonsocket, R. I. Treasurer Beneficiary Department, Albert E. Jones, Uxbridge, Mass.

It was voted that the next meeting should be held in Providence on the third Saturday in May, 1905. The meeting was followed by a dinner at the American House. Following is a list of the members present:

T. W. Biddles, Bloomfield, N. J.; S. Walker, Uxbridge, Mass.; George W. Gerry, Collinsville, Mass.; Walter Pickford, Leominster, Mass.; Jacob Geb, Franklin, Mass.; John W. Linnehan, Boston, Mass.; Fred W. Dixon, Boston, Mass.; John H. Fitzroy, Fitchburg, Mass.; A. S. Taylor, Harrisville, N. H.; Eleazer Davies, Plymouth, Mass.; John Leonard, Dexter, Me.; R. B. Robinson, Lowell, Mass.; Thomas Pendergast, Lowell, Mass.; W. H. Wilcox, Watertown, Mass.; Andrew C. Wilson, Leicester, Mass.; C. M. Ellis, Putnam, Conn.; James J. Rae, Cherry Valley, Mass.; T. N. Parent, Franklin Falls, N. H.; L. H. Eddy, Westerly, R. I.; W. D. Cragin, Uxbridge, Mass.; Charles I. Keegan, Uxbridge, Mass.; Louis Carmark, Providence, R. I.; Charles Hurst, Providence, R. I.; Herman Ambach, Lymansville, R. I; James E. Quinn, Sabattus, Me.; Alexander L. Stewart, Hyde Park, Mass.; Thomas Buchan, Hyde Park, Mass.; P. T. Donahue, Woonsocket, R. I.; J. T. McCormack, Hyde Park, Mass.; Frank L. Whittemore, New Boston, Conn.; A. E. Jones, New Boston, Conn.; John Sanderson, Gilbertville, Mass.; Richard Hackett, Gilbertville, Mass.; David Shepard, Gilbertville, Mass.; E. G. Tainter, Wamesit, Mass.; Thomas Richmond, Killingly, Conn.; Louis M. Allison, Worcester, Mass.; Asa Garth; Fitchburg, Mass.; Walter Wright, Fitchburg, Mass.; Henry Shaw, Leominster, Mass.; Eugene Saxe, Boston, Mass.; H. L. Tobey, Boston, Mass.; Gustav W. Schellschmidt, Hyde Park, Mass.; Robert Ashworth, Leicester, Mass.; E. S. Eddy, Worcester, Mass.; T. H. Plouff, Webster, Mass.; Elmer G. Talbert, Olneyville, R. I.; R. N. LaRose, Cherry Valley, Mass.; Walter Rodman, Jr., Lafayette, R. I.; Richard O'Donnell, Oakland, Me.; Jos. H. Ridings, Meriden, Conn.; James B. Jones, Philadelphia, Pa.; John Wm. Whitehead, Maynard, Mass.; James J. Morgan, Maynard, Mass.; Wm. Ahern, Worcester, Mass.; Samuel H. Illman, Philadelphia, Pa.; Archibald Ormiston, Waterville, Me.; M. F. Daly, Utica, N. Y.; Wm. Batty, Philadelphia, Pa.; George Ormiston, Oakland, Me.; Michael J. Shaughnessy, Worcester, Mass.; Thomas Gordon, Whipples, R. I.; Wm. L. Lacy, Bridgeton, R. I.; James Carmark, Providence, R. I.; Frank P. Gallagher, Woonsocket, R. I.; Benj. Eyers, Lowell, Mass.; Bernard V. Searles, Lowell, Mass.; J. H. Horsfall, Lowell, Mass.; Walter E. Newbert, Boston, Mass.; John E. Graham, Lowell, Mass.; John Hughes, North Billerica, Mass.; Fred Moseley, Canton Junction, Mass.; J. H. Pickford, Clinton, Mass.; James H. Rule, Lowell, Mass.; W. H. Stopherd, Lowell, Mass.; Charles A. Kennedy, Millbury, Mass.; James P. Kennedy, Millbury, Mass.; H. W. Fitzroy, Mechanicsvile, Conn.; John Ingham, Stafford, Conn.; W. F. Myers, Lafayette, R. I.; Jos. T. Dolan, Wickford, R. I.; John J. Devitt, North Billerica, Mass.; Edwin H. Marble, Worcester, Peter Rainville, Uxbridge, Mass.; Peter McMillan, Ludlow, Vt.; James T. Lord, Blackstone, Mass.; Ernest Hafele, Pittsfield, Mass.; Fred A. Gunther, W. Fitchburg, Mass.; Simon Taylor, Spencer, Mass.; Wm. Taylor, Holyoke, Mass.; Wm. White, New Mexico; James J. Feeley, Worcester, Mass., R. Fischer, Springfield, Mass.; J. J. Henderson, Cordaville, Mass.; G. W. Burr, Woonsocket, R. I.; A. L. Tainter, Lowell, Mass.; James J. Faron, Meriden, Conn.; Wm. E. Davison, Uxbridge, Mass.; John Sheehan, New Bedford, Mass.; Frazier L. O'Leary, Boston, Mass.; James Cobb, Caryville, Mass.; Thomas Goddard, Caryville, Mass.

## William Souls Retires.

William Souls of Wool Exchange, New York, announces his retirement from active business. E. S. Parkhurst & Co., of Gloversville, N. Y., will continue the business at the same address, under the management of William H. Souls and Ammon P. Souls, who have lately been associated with their father.

## Warp Stop Motion Patent Decision.

On October 28th the United States Circuit Court of Appeals for the First Circuit, at Boston, handed down a decision in the suit of the Kip-Armstrong Company against the King Philip Mills growing out of the use of the Coldwell-Gildard stop-motion, which was practically developed at the King Philip Mills and with which all their looms are now equipped. It was alleged by the Kip-Armstrong Company, among other things, that the lower contact bar in this electric stop-motion infringed the Baker patents owned by the Kip-Armstrong Company. The lower court took this view of the matter, but the Court of Appeals reversed the decision, saying that in no view of the matter could there be held to be any infringement, and awarded judgment against the Kip-Armstrong Company with costs in favor of the King Philip Mills.

The claim in issue was "In an electrical warp stop motion for looms, the combination with the thread supported circuit closers, of a rotary contact bar for said circuit closers to engage, a circuit embracing said bar and closers, and electrically controlled clutch shipping mechanism." The court says that the patentee does not, and could not successfully, maintain that he is entitled to cover broadly an electrical warp stop motion for looms, and the special claim for infringement was in connection with a rotary bar, which in the case of the complainant's patent was kept in continuous motion by a belt and shaft co-operating with the rest of the mechanism. The bar used in the King Philip Mills is movable on its axis, so that it may be rotated if an attempt is made to do so, but it is not connected with the other mechanism, and is incapable of rotation except manual, and as a matter of fact was not rotated in operation. The Court of Appeals, therefore, reversed the decision in the lower court, and ordered the case dismissed.

Charles F. Richardson appeared as counsel for the King Philip Mills and Messrs. Dickerson, Brown, Raegener & Binney for the Kip-Armstrong Co.

This decision will be of some interest because electric stop-motions are coming into extensive use, and the Coldwell-Gildard motion has already been adopted by a number of mills in the Fall River, New Bedford and Blackstone Valley districts, including the King Philip, Granite, Ancona, Barnaby and others in Fall River, the Grinnell and Butler at New Bedford, and the Berkeley, Hope, Lonsdale, Ashton, Crompton and others in the Rhode Island district.

## Spindle Patent Case.

There have recently appeared in some trade publications, items giving the erroneous impression that the Sawyer Spindle Co. had lost an important case involving the infringement of the Sherman patent by the James Brown Machine Co. or the Estate of James Brown. In this case the Sawyer Spindle Co. were the complainants. We are informed the decision was simply to the effect that the defendant, The Brown Company, has not proved an important point, which is necessary to its case, and the judge has given them leave to take further testimony.

## A Model Button Factory.

The business of the International Button Co., of Rochester, N. Y., has grown to such proportions that they have been compelled to build a model factory especially adapted to their own wants, and they are now located in the new building, at the corner of Monroe avenue and Rutgers street in the above named city. To M. B. Shantz, the treasurer, and his son, E. Shantz, the secretary and manager, belong the credit of the success of this company. The reputation which the product of this concern has made for itself is the cause of its steady and healthy growth. While the name of the International Button Co. has only been known for about three years, the name of Shantz has been identified with the button industry for three generations, and that name is a guarantee in that particular line. Their new factory consists of a 5-story brick building, 115 by 40, with separate boiler house, and is equipped to run with both steam and electric power. It is well lighted and was planned and arranged for the economic handling of their own business, which consists in taking the raw material and bringing out the finished product. Mr. Shantz reports business in good shape, their customers being scattered all over the United States and Canada, besides some foreign countries. Their product includes a full and complete line of buttons of all kinds, including pearl, ivory, cloth and metal. One of the specialties on which they have made quite a success is their metal shank pearl button with "the shank that won't come out." They invite particular attention to their complete line of fine buttons for high grade knit goods and will be pleased to send samples and prices to all manufacturers interested.

## The Highest Award to Wyandotte Textile Soda.

Wyandotte Textile Soda, manufactured by J. B. Ford Co., of Wyandotte, Mich., received the highest award and only gold medal given by the Superior Jury at the St. Louis Exposition of any material, because of its special fitness for scouring wool, yarns and finished cloth. This brand of Wyandotte soda has been named "Textile Soda," because of its peculiar properties and special adaptability when used for the above purpose.

This product is rapidly gaining in favor in the textile trade, as one manufacturer after another tries it and finds that the claims made for it are proved in the improvement of his goods.

The company has issued a special booklet on this subject, embodying a report by Prof. Matthews, of Philadelphia Textile School, which may be had upon application.

## A Big Plant.

David Lupton's Sons Company are having constructed a one-story addition, 85 by 200 feet, to their manufactory at Allegheny Avenue and Tulip Street, Philadelphia, to cost $15,000. With the completion of this addition the plant will cover seven acres. Their fireproof windows are being largely adopted.

## Additional Capital.

C. L. Jackson, banker and broker, has removed from his offices in the Drexel Bldg. to new and more advantageous offices, suite 226-228-230 Bourse Bldg., Philadelphia.

During the time Mr. Jackson has been engaged in the business of financing industrial enterprises, he has secured a large clientele of investors, and has furnished large sums for additional business capital to going concerns in addition to floating stock and bond issues of meritorious enterprises. Mr. Jackson confines his business strictly to industrial lines and engages in no mining propositions.

A large number of manufacturing and other industrial plants are always in the market for additional business capital. How to secure the money necessary to keep pace with the growth and necessities of the time is always a perplexing problem, as the facilities and acquaintances of manufacturers are usually limited and a feeling exists that an invitation to invest money in a going concern might be misconstrued into a belief that the business was to be unloaded or was in financial straits that required prompt action to save from bankruptcy, therefore the services of an outside banker offers a happy solution of a difficult situation.

A banker occupies a position that is thoroughly understood among investors, and he is held responsible for the character and security of the investment, and often times the assurance that the business is safe and remunerative, is sufficient to convince their clients, although it must not be presumed that the banker has not satisfied himself that the proposition is of merit and the individuals are men of ability and integrity. In order to arrive at this conclusion it is necessary to have the accounts audited and the plant appraised by competent persons, which is made basis of any statement to the public.

Offering stock and bonds to the investing public is a feature of the banking business that required considerable thought and preparation, as often times a good proposition results in utter failure because of incompetent handling, and a badly written prospectus, or the salient features from an invest standpont are eliminated. What investors require is assurance of stability of the business and a statement of earnings that justify the belief that the enterprise will continue on a dividend paying basis. Mr. Jackson has conducted business along these lines and has earned his success by fair dealing and avoiding misrepresentations.

## Textile Soaps.

Allen, Sherman & Co., Brooklyn, N. Y., have for many years been engaged in the manufacture of soap for mill use and owing to the purity of their product have built up a large trade and secured the confidence of their many customers, among whom are numbered some of the largest users of textile soaps in the United States.

Messrs. Allen and Sherman are particularly desirous that their soaps should be subjected to chemical tests so that buyers may know of the intrinsic merits of the goods, and solicit trial orders.

## Alliances in the Aniline Industry.

It is reported that an agreement has been reached between the Badische Anilin & Soda Fabrik, Ludwigshafen am Rhein, and Farbenfabriken formerly Fr. Bayer & Co., Elberfeld, the object of which is to bring about a community of interest and policy between the two concerns. The agreement is made with a view to advance the mutual interests through economies in manufacturing, etc.

This unity of interest is not made for the purpose of bringing about an advance in the price of the products of the two manufacturers, but rather to increase their facilities through economies in manufacturing so as to be able to furnish consumers even better and more advantageous products than heretofore.

It is said that the arrangement is not intended to change, in any way, the relation of the two companies to their customers.

A closer business connection has also been effected between the Farbwerke, vormals Meister Lucius & Bruening of Hoechst and the firm of Leopold Cassella & Company of Frankfort-on-the-Main, Germany, which have for a long time been closely allied in their business relations. The Farbwerke manufacture certain raw materials which Leopold Cassella & Company require in their works, and of which the latter have bought in great part from the Farbwerke. Both factories manufacture dyestuffs and other chemicals of different character, an exchange of which is complemental, one supplementing the other. Thus it was but natural that a combination of the interests of the two concerns should be formed, and an arrangement has finally been adopted.

The firm of Leopold Cassella & Company is to be formed into a limited liability company under the style of Leopold Cassella & Company, Limited (G. m. b. h.) with a capital stock of 20 million marks and bonds to the amount of 10 million marks. Of this capital stock, the Farbwerke (subject to the approval of their shareholders) are to take 5 1/2 million marks against 5 1/2 million marks of the Farbwerke shares to be issued. Some of the members of the firm of Leopold Cassella & Company will go on the Board of Directors of the Farbwerke, and some of the Directors of the Farbwerke will become members of the Board of Leopold Cassella & Company, Limited.

## Loom Patents Change Hands.

The Crompton-Thayer Loom Co. of Worcester, Massachusetts, have purchased all the patents issued to H. W. Smith of that city, except one patent, which Mr. Smith sold to the Draper Co. The claims of the patent sold to the Draper Co. cover looms with fancy head and automatic feed.

The patents obtained by the Crompton-Thayer Loom Company, about twelve in number, cover methods of detecting on the bobbin in looms using drop boxes.

It is rumored that the Crompton-Thayer Loom Co. paid a large price to obtain all these patents, the officials of the company believing they control the entire automatic drop box field.

### Send for One.

The Cling-Surface Co., 199 Virginia St., Buffalo, N. Y., will send to any one interested in belt management, who mentions the Textile World Record, a copy of the last edition of their book, "New Knowledge on Belt Management," which contains newer information on this subject than any technical book published to date.

### Cling-Surface.

The following letter explains itself:

Cedartown, Ga., Nov. 1, 1904.

Cling-Surface Co., Buffalo, N. Y.

Gentlemen: In reply to your favor of the 29th ult., we beg to state that we have used Cling-Surface during the past several years (5) with entire satisfaction, and we testify with pleasure to its many merits.

Cling-Surface permits the belts to run more loosely, prevents slipping, puts a nice face on the belts, and preserves them. We further found that after our belts had become thoroughly permeated with Cling-Surface the consumption in a given period was greatly reduced, and the life of the belt prolonged.

We wish also to add that we experimented with Cling-Surface on an exposed, outside rope drive with most gratifying results. On this drive we originally used a hemp rope, but have found that an ordinary cotton rope well covered with Cling-Surface is rendered almost impervious to the weather, and lasts indefinitely. Yours very truly,

Cedartown Cotton & Export Co.,
J. Wright Adamson, Gen. Mgr.

### Boston Office.

The New England offices of the Allis-Chalmers Company in Boston, which are now in the Board of Trade Building and the offices of its electrical department, The Bullock Electric Manufacturing Company, in the Journal Building, will be consolidated on December 1st and removed to the State Mutual Building, 50 Congress Street. Mr. George H. Berg will be the manager in charge of the consolidated offices.

### Amylo Gum.

J. M. and J. S. Nicol, Paterson, N. J., are supplying manufacturers with large quantities of Amylo gum which takes the place of glue, dextrine, gelatine, gum tragacanth and liquid sizes. It is said to be perfectly neutral and to have no effect on the most delicate shades, penetrating the fibre and giving a lasting finish which is not affected in storage. The manufacturers claim that it is more adhesive than dextrine or starches for all filling purposes such as China clay, and can be used with dextrine, starch, glue and other substances.

Samples of this material and further information regarding it can be obtained upon application to the manufacturers.

### Bramwell Feed Parts.

Messrs. George S. Harwood & Son, 53 State St., Boston, Mass., have issued a new blue print, showing all parts of their Bramwell card feed. Any carder who is running Bramwell feeds on cards or garnett machines may have one of these blue prints sent to him without expense by writing for it. The parts are correctly numbered, making the ordering of repairs simple and accurate.

### Running Over-time.

Every day brings fresh evidence of a decided revival of business in textile circles. The machinery builders are receiving many more orders and some of them are quite busy. One of those which is exceptionally so, is the Philadelphia Drying Machinery Co., of 6721 Germantown Ave., Philadelphia, manufacturers of the Hurricane line of drying, carbonizing, washing and scouring machinery. They advise us that they have recently secured a large number of new contracts, with the result that their shops are running over-time.

### Howard & Bullough American Machine Co.

The advertisement of the Textile Appliance Co. appears in this issue in the position regularly occupied by Howard & Bullough American Machine Co. This is done through the courtesy of the latter firm, whose advertisement for this issue will be found on page 57.

### The Christmas Delineator.

The December Delineator, with its message of good cheer and helpfulness, will be welcomed in every home. The fashion pages are unusually attractive, illustrating and describing the very latest modes in a way to make their construction during the busy festive season a pleasure instead of a task, and the literary and pictorial features are of rare excellence. A selection of Love Songs from the Wagner Operas, rendered into English by Richard de Gallienne and beautifully illustrated in colors by J. C. Leyendecker, occupies a prominent place, and a chapter in the Composers' Series, relating the Romance of Wagner and Cosima, is an interesting supplement to the lyrics. A very clever paper entitled "The Court Circles of the Republic," describing some unique phases of Washington social life is from an unnamed contributor, who is said to write from the inner circles of society. There are short stories from the pens of F. Hopkinson Smith, Robert Grant, Alice Brown, Mary Stewart Cutting and Elmore Elliott Peake, and such interesting writers as Julia Magruder, L. Frank Baum, and Grace MacGowan Cooke hold the attention of the children. Many Christmas suggestions are given in needlework and the cookery pages are redolent of the Christmas feast. In addition, there are the regular departments of the magazine, with many special articles on topics relating to woman's interests within and without the home.

## Allis-Chalmers Personnel.

Mr. W. A. Nelson, who was appointed superintendent of equipment of the Allis-Chalmers Company, October 11, 1904, began his services with that company in August, immediately after his resignation became effective, as assistant superintendent of the Westinghouse Electric and Manufacturing Company. During his connection of nearly five years with the Westinghouse Company, Mr. Nelson had immediate charge of the plans for the arrangement and location of machinery in the New East Machine Shop. Prior to his connection with the Pittsburg Company, Mr. Nelson had similar duties at the works of Pratt & Whitney Company, going to Hartford from Fitchburg where he had been superintendent of the Simonds Rolling Machine company for a number of years.

Mr. Nelson will have duties in connection with all the works of the Allis-Chalmers Company and his experience admirably qualifies him for making a success in this new undertaking.

Mr. R. C. Wright, for several years in charge of the design of special tools and fixtures used in the manufacture of steam turbines at the East Pittsburg works of the Westinghouse Machine Company, has resigned his position with that company to accept similar duties at the Milwaukee works of the Allis-Chalmers Company.

Mr. Charles F. Barth has recently been appointed foreman of the steam turbine department at the West Allis Works of the Allis-Chalmers Company. Mr. Barth resigned his position as foreman at the East Pittsburg Works of the Westinghouse Machine Company, a position he had occupied for a number of years.

Mr. C. A. Derby has resigned his position as assistant manager of the Lyon Cypress Lumber Company to join the selling staff of the Allis-Chalmers Company, in its saw mill department. Mr. Derby brings to his new position a valuable and varied experience, having been general manager of the F. B. Dubach Lumber Company and previously in the engineering department of the Colorado Fuel and Iron Company at Pueblo, Colorado.

## The Ideal Outing Place.

The soil of Lakewood, which consists mainly of porous sand and gravel, besides rendering the air delightfully dry and healthful, makes it possible by furnishing an almost perfect system of natural drainage, to keep the roads in and around the town in unsurpassed condition. Delightful drives lead to Point Pleasant, ten miles distant, Toms River and the Deserted River of Allaire. In another direction is a drive to Pine Park which is excelled by few places in attractiveness. The multitudes of walks and rambles also have careful attention. Dry and well kept gravel walks, with rustic bridges and resting places at frequent intervals, skirt the borders of Lake Carasaljo, and the circuit of the Lake is one of the most charming walks in the vicinity. The many facilities for out-door sports and recreations, together with its mild and pleasant winter climate have made Lakewood justly popular. An interesting descriptive booklet on Lakewood, containing information as to the rates and accommodations at the numerous hotels and boarding houses, has been published by the Central Railroad of New Jersey, and may be had for the asking. Write to C. M. Burt, General Passenger Agent, 143 Liberty St., New York City.

## Electrical Construction.

Three Westinghouse 62.1/2 kilowatt engine type generators which have been in service in the basement of the New England building, in Cleveland, Ohio, have recently been subjected to a test which shows up Westinghouse construction in a very good light. A fire occurred in the basement where the generators were installed, and completely burned away the insulation on the outside of the field coils; the fire department played upon these machines with six lines of hose for one hour. Within one hour from the time the water was turned off the machines, one of them was in operation and carrying its full rated load. The second machine was put in operation later, and carried its full rate load, and at the present time two of these machines are operating under the load normally carried by all three of them.

The fire-proof insulation of the field coils withstood the fire perfectly, even though the outer protecting coverings were entirely consumed, and the heat was so intense as to burn and blister the finish on the frames. Electrical machinery as usually constructed is scarcely expected to stand a fire and water test, but it appears that such a guarantee might have been made on these generators.

## Grates and Grate Bars.

W. W. Tupper & Co., 39 Cortlandt St., New York, have for years been making sectional grates and grate bars. At the present time there are in use more than 8,000 in different boiler furnaces. Improvements have been made from time to time in their form and in the proportions of metal and air opening required to give them the requisite strength with the largest percentage of air opening for burning various kinds and sizes of coal. The grates are made in various styles for different purposes and for different kinds of fuel. Many large textile establishments are using Tupper's grate bars and have been for years.

## Change in Name Only.

The corporate name of the McMichael & Wildman Manufacturing Co. has been changed to the Wildman Manufacturing Co. This is a change in name only, as the business of manufacturing automatic circular rib knitting machinery will be continued under the same management and control.

## Removal.

F. Nathaniel Perkins, who for many years has been at 620 Atlantic Ave., announces his removal to 200 Summer St., Boston. Mr. Perkins has always on hand a large line of samples of foreign and domestic wool and noils.

# Recent Textile Patents.

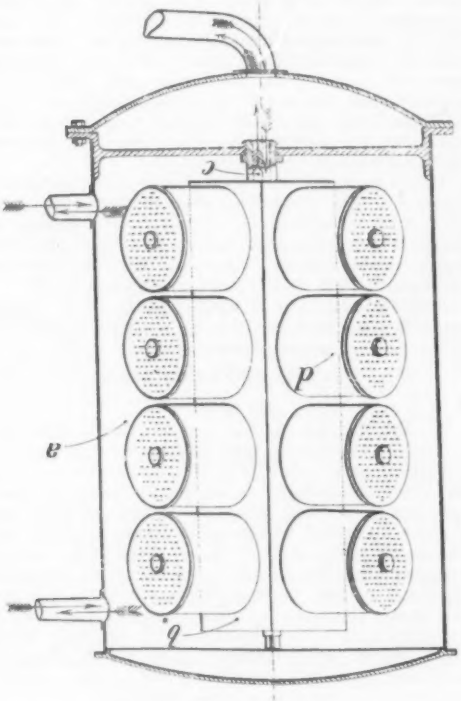
CARPET WIRE and Cutter. 774,695. Albert Price, Philadelphia, Pa.

CARTRIDGE BELT, Woven. 773,066. William C. Fisher, Middletown, Conn., assignor to The Russell Mfg. Co., Middletown, Conn.

DYEING under Pressure, Apparatus for. 773,378. Leon Detre, Reims, France.

This invention relates to an apparatus for dyeing under pressure yarns wound up in the form of bobbins, and has for its object to dye regularly without great expenses of manual labor and with a great rapidity the yarns with the most delicate shades.

The drawing shows an elevation of the disposition for carrying out the new process.




In the casing, a, of an apparatus for dyeing under pressure one or many supports, b, are disposed. The support, b, is a hollow triangular prism the bases of which are closed, one of these bases being provided with a nozzle, c, which is fitted to an apparatus which insures the circulation of the dye. On the faces of the prism are fixed hollow cylinders, d, having internally the size of a bobbin of the yarn to be dyed. The faces of the prism are perforated with many holes in the parts corresponding to the bottom of the hollow cylinders, d. The other end of these hollow cylinders are opened or closed by a perforated lid or by other suitable means allowing the dye to pass.

EMBROIDERING Machine. 773,653. Alexander Laubscher, Bridgeport, Conn., assignor to Wheeler & Wilson Mfg. Co., Bridgeport, Conn.

SPINNING Apparatus. 774,744. George O. Draper, Hopedale, Mass., assignor to Draper Co., Hopedale, Mass.

SPINNING Apparatus. 774,742. George O. Draper, Hopedale, Mass., assignor to Draper Co., Hopedale, Mass.

SPINNING Apparatus. 774,743. George O. Draper, Hopedale, Mass., assignor to Draper Co., Hopedale, Mass.

SPINNING Machine, Stop Motion. 774,149. Manton T. Bentley, York, Pa., assignor of one-half to York Silk Mfg. Co., York, Pa.

SPINNING Spindle Bobbin Clutching Means. 773,797. Henry Lawrence, Hopedale, Mass., assignor to Sawyer Spindle Co.

SPINNING and Twisting Apparatus, Ring. 773,553. George O. Draper, Hopedale, Mass., assignor to Draper Co., Hopedale, Mass.

SPINDLES, Bobbin-clutching Means for Rotatable. 773,554. John C. Edwards, Brookline, Mass., assignor to Sawyer Spindle Co.

SPINDLES, Bobbin-clutching Means for Rotatable. 773,798. Henry Lawrence, Hopedale, Mass., assignor to Sawyer Spindle Co.

SPOOL Attachment. 775,219. Fanny G. Hendryx, Springfield, Ohio.

SPOOL or Bobbin. 774,734. Walter E. Bennett, Portsmouth, N. H., assignor to Morley Button Mfg. Co., Saco, Me.

TWISTING Machines, Stop Motion. 773,038. Thomas H. Smith, Jamestown, N. Y.

The object of this invention is to simplify, cheapen and perfect a stop-motion device made by this patentee, in such a manner as to give it a wider range of application, allowing of the successful use of a stiff tongue, and to give added celerity and ease to its admission and release from the twisting-rolls and greater durability to the wearing parts.

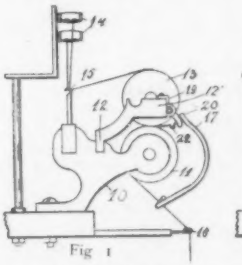


Fig. 1

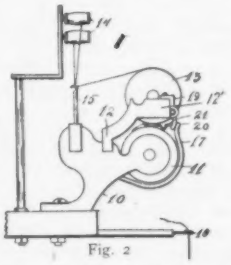


Fig. 2

In the drawings, Fig. 1 is a side elevation of the roller-stand with the improved stop-motion device attached to the cap-bar and in position on the thread. Fig. 2 is an elevation of the same with the thread broken and the rolls stopped and thread held by the pivotal tongue.

TWISTING Machine, Belt Driven. 773,354. Joseph E. Tynan, Paterson, N. J.

WOVEN FABRIC. 774,775. William Pearsall, Worcester, Mass., assignor to Matthew J. Whittall, Worcester, Mass.

WOVEN FABRIC Forming Apparatus. 773,808. Theodore Pentlarge, Essex, N. J., assignor to the Williams Mfg. Co., Northampton, Mass.

# C. E. RILEY & CO.

**65 Franklin Street, BOSTON, MASS.**

BUILDERS AND IMPORTERS OF

**COTTON WOOLEN WORSTED**

# MACHINERY

AGENTS FOR

**HOWARD & BULLOUGH, Ltd.**, Picking, Revolving Flat Cards, Electric and Mechanical Stop Motion Drawing, Slubbing, Intermediate, Roving and Jack Frames, Spinning and Twisting, New Patent Self-Acting Mules, Spoolers, Warpers and Slashers,

**RICHARD THRELFALL**, Patent Fine Spinning Mules, 100s to 350s.

**HALL & STELLS**, Worsted Machinery.

**CONSTRUCTION DE MACHINES, Ci-Devant, F. J. Grun.** French Worsted Machinery.

**HOYLE & PRESTON**, Noble Combs, Back Washing Machines, etc.

**JAMES TOMLINSON, Ltd.**, Cotton Waste Machinery; Engine Cleaning and Hard Waste Breaking Machines, etc.

**JOHN HAIGH & SONS, Ltd.**, Woolen and Worsted Cards, Fearnoughts, Feeds, etc,

**THOS. BROADBENT & SONS**, Hydro Extractors, Patent Suspended Steam and Electrical Driven, Machines kept in stock in Boston.

**JOHN WHITELEY & SONS**, Card Clothing for Cotton; Tempered Steel, Plough Ground, Needle Pointed.

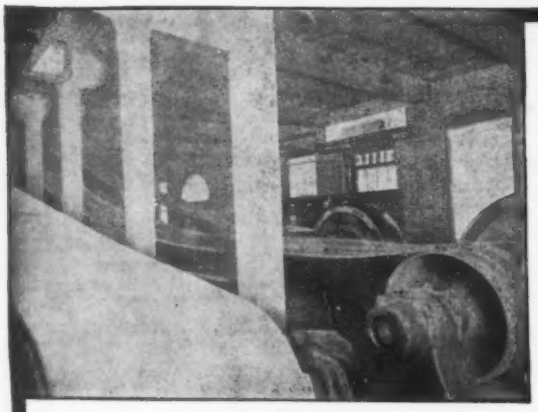
**L. M. TETLOW & SONS**, Card Clothing for Woolen and Worsted; Tempered Steel, Needle Pointed.

**J. GREENHALGH & SONS**, Cotton Waste Willows, for Fly, Strips, Picker Droppings, etc.

**DRONSFIELD BROS., Ltd.**, Grinding Rolls and Emery Filleting. Stock kept in Boston.

SPINDLES, FLYERS, FLUTED ROLLS, ETC.

DIRECT .. .. IMPORTERS OF **EGYPTIAN COTTON**



JAMESTOWN, N. Y., Oct. 27, 1904.

CLING-SURFACE CO., Buffalo, N. Y.

GENTLEMEN:—The data herewith explains the conditions of the belts you have photographs of.

Our engine is 1000 H. P. The belts run from two 20 ft. pulleys (62 R. P. M.) to two 31" pulleys (450 R. P. M.) The large belt is 40" face, double leather, on 45 ft. centers. The shorter belt is 40" face, also double leather and on 35 ft. centers. The two belts were doing 500 H. P. when photographed and could do much more.

I have used Cling Surface here for five years and am entirely satisfied with it. These belts are clean, not sticky, pliable and in fine condition and the larger is running with a sag of 4 ft., while the smaller is 22" slack. I believe in slack belts and Cling-Surface permits me to run them so.

Yours very truly,

W. H. COBB, Chief Engr.,
Broadhead Worsted Mills.

## Five Years Use in the Broadhead Mills

These big belts are a good example of what Cling-Surface is doing. Don't think of Cling-Surface merely as a material for belts. It is that, but its far reaching results make it a means to a new method of belt management—the easy or slack method, and that means low friction load, economy of oil, babbit, belts, fuel, power, time and trouble.

Get a package therefore and test it—severely.

CLING-SURFACE CO 199-205 Virginia St Buffalo N Y

BOSTON
170 Summer Street

NEW YORK
39 Cortlandt Street

PHILADELPHIA
The Bourse

LUNKENHEIMER
SIGHT FEED LUBRICATORS
AND OILING DEVICES

We are not only leaders but headquarters for Lubricating Appliances. Our line is the most complete made and warranted to satisfy. If you want the satisfying kind specify *Lunkenheimer*; order from your dealer. Write for catalog.

THE LUNKENHEIMER COMPANY, CINCINNATI, O., U. S. A.

New York, 26 Cortlandt St. Philadelphia, 1428-32 Callowhill St. New Orleans, Tulane-Newcomb Bldg. London, 35 Great Dover St. Paris, 24 Boulevard Voltaire.

# Buyers' Index.

The addresses of builders of mill machinery and dealers in mill supplies, whose names appear in the following classified index, may be found upon referring to their advertisement. The Alphabetical Index to advertisers follows this classified list. Buyers who are unable to find in these classified lists such machinery or supplies as they desire, are invited to communicate with the publishers, who can, in all probability, refer them to proper sources.

Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

---

**Accident Cabinets.**
Putnam & Co.

**Accounting Machine.**
Mechanical Accountant Co.

**Accountants, Public.**
Garry, Brown & Co.

**Air Moistening System.**
American Moistening Co.
Bell Pure Air & Cooling Co.
Schutte & Koerting Co.

**Appraisals.**
Audit & Appraisement Co. of America, The.

**Architects and Mill Engineers.**
Ballinger & Perrott.
Dean & Main.
Ferguson, John W.
Stearns & Castor.
Suck, Adolph.

**Auditors.**
Garry, Brown & Co.

**Automatic Feeds for Cotton and Wool.**
American Drying Machinery Co.
Harwood, Geo. S. & Son.
Leigh, Evan A.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Schofield, Wm. Co.
Woonsocket Machine & Press Co.

**Baling Machine.**
North Chelmsford Machine Co.
Torrance Mfg. Co.

**Bandings.**
——See under Yarns

**Baskets.**
Lane, W. T. & Bro
Morris & Co.

**Belting.**
Houghton, E. F., Co.
Jeffrey Manufacturing Co.
Main Belting Co.
Shultz Belting Co.
——See also Mill Supplies.

**Belt Dressing.**
Cling Surface Mfg. Co.
Dixon, Jas., Crucible Co.
Houghton, E. F., Co.
Stephenson Mfg. Co.

**Belt Lacing Machines.**
Diamond Drill & Machinery Co.

**Bindings.**
——See Tapes and Braids.

**Bleaching Kiers.**
Arlington Mch. Wks. (Arthur Birch, prop.)
Textile Finishing Machinery Co.

**Bleaching Materials.**
Bosson & Lane.
Roessler & Hasslacher Chemical Co.

**Blowers and Blower Systems.**
American Blower Co.
Barney Ventilating Fan Works.
Boston Blower Co.
Buffalo Forge Co.
Mass. Fan Co.
Philadelphia Drying Machinery Co.
Schutte & Koerting Co.
Sturtevant, B. F., Co.
Schnitzler, Chas. H.

**Blowers.**
Green Fuel Economizer Co.

**Bobbin Covers.**
Kolb, Frank E.

**Bobbins, Spools, Shuttles, Etc.**
Leigh, Evan A.
Tebbets, E. L. & Co.

**Boilers.**
——See Steam Boilers.

**Boiler Arches, "Steel Mixture."**
McLeod & Henry.

**Boiler Setting.**
Harris, J. B.

**Boxes, Cloth Boards, Etc.**
Pearson, J. T.

**Boxes (Paper).**
——See Paper Boxes.

**Braiding Machinery.**
New England Butt Co.
Textile Machine Works.

**Braids.**
——See Tapes, Braids and Edgings.

**Brass (Perforated).**
——See under Perforated Metal.

**Brushes.**
Felton, S. A. & Son Co.
Mason Brush Works.

**Brushers.**
——See Napping Machines.

**Burr Pickers.**
Curtis & Marble Machine Co.
Sargent's, C. G., Sons.

**Burlaps.**
Stoddard, Haserick, Richards & Co.

**Buttons.**
International Button Co.

**Calico Printers' Machinery and Supplies.**
Arlington Mch. Wks. (Arthur Birch, prop.)
Butterworth, H. W. & Sons Co.
Taunton, New Bedford, Copper Co.
Textile Finishing Mchry. Co.
——See also Dyeing, Bleaching, Machinery, etc.

**Canvas Baskets.**
Lane, W. T. & Bro.
Morris & Co.

**Carbonizing.**
Riverdale Woolen Co.

**Carbonizing Machinery.**
American Drying Machinery Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sargent's, C. G., Sons.

**Card Clothing.**
Ashworth, Elijah.
Leigh, Evan A.
Riley, C. E. & Co.
Stoddard, Haserick, Richards & Co.

**Card Feeds.**
——See Automatic Feeds.

**Card Grinding Machinery.**
Entwistle, T. C., Co.
Leigh, Evan A.
Philadelphia Textile Machinery Co.
Riley, C. E. & Co.
Stoddard, Haserick, Richards & Co.

**Carders' Tools.**
Brown, W. H.

**Carpet Machinery.**
Altemus, Jacob K.
Curtis & Marble Machine Co.
Philadelphia Textile Machinery Co.

**Castings.**
Lunkenheimer Co.
Schofield, Wm., Co.

**Chemicals.**
Grasselli Chemical Co.
Roessler & Hasslacher Chemical Co.
Solvay Process Co.

**Chemists.**
Little & Walker.

**Cling Surface.**
Cling Surface Mfg. Co.

**Clocks.**
Pettes & Randall Co.
Riggs & Brothers.

**Cloth Boards.**
Chaffee Bros.
Pearson, J. T.
Shryock, J. K.
Smyth, J. L. N. Paper Co.

**Cloth Stretchers.**
Arlington Mch. Wks. (Arthur Birch, prop.)
Textile Finishing Machinery Co.

**Clutches.**
American Tool & Machine Co.
Carlyle-Johnson Machine Co.
Hunter, James, Machine Co.
Reeves Pulley Co.

**Combs (Wool and Cotton).**
Hood, R. H.
Leigh, Evan A.
Philadelphia Textile Machinery Co.
Riley, C. E. & Co.
Stoddard, Haserick, Richards & Co.

**Combustion System.**
Harris, J. B.

**Conveyors, Pneumatic.**
——See Blowers & Blower Systems.

**Conveying Machinery and Chains.**
Jeffrey Manufacturing Co.

**Cop Tubes.**
——See Paper Tubes.

**Copper (Perforated).**
——See under Perforated Metal.

**Copper Print Rollers.**
Taunton, New Bedford Copper Co.

**Coppersmiths.**
Badger, E. B. & Sons Co.

**Copper Work for Dyers.**
Butterworth, H. W. & Sons Co.
Textile Finishing Machinery Co.

**Cotton.**
Blaisdell, S., Jr., Co.
Charles, W. B.
Riley, C. E. & Co.
Stoddard, Haserick, Richards Co.

**Cotton Elevators.**
Buffalo Forge Co.

**Cotton Machinery.**
Altemus, Jacob K.
Atherton, A. T., Machine Co.
American Drying Machinery Co.

**Alphabetical Advertising Index, with page numbers, follows this list.**

Cotton Machinery—cont.

Ashworth, Elijah.
Baker Machine Co.
Barker, James.
Butterworth, H. W. & Sons Co.
Crompton & Knowles Loom Works.
Crompton-Thayer Loom Co.
Cohoes Foundry & Machine Co.
Coldwell-Gildard Co.
Curtis & Marble Machine Co.
Draper Company.
Easton-Burnham Co.
Elliott & Hall.
Entwistle, T. C., Co.
Firth, William, Co.
Houghton, L. T.
Howard & Bullough American Mach. Co
Kilburn, Lincoln & Co.
Kitson Machine Co
Leigh, Evan A.
Lowe, S. C.
Lowell Machine Shop
Mason Machine Works.
Metallic Drawing Roll Co., The.
Neversiip Cop Spindle Co.
North Chelmsford Machine Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Providence Machine Co.
Rheinhauer, D. & Co.
Riley, C. E. & Co.
Saco & Pettee Machine Shops.
Schaellibaum, Robert, Company.
Schofield, Geo. L.
Stoddard, Haserick, Richards & Co.
Textile Appliances, Ltd.
Textile Finishing Machinery Co.
Vacuum Dyeing Machine Co.
Whitin Machine Works.
Woonsocket Machine & Press Co.

**Cotton Openers and Lappers.**
Atherton, A. T., Machine Co.
Howard & Bullough American Mach. Co
Kitson Machine Co.
Leigh, Evan A.
Riley, C. E. & Co.
Stoddard, Haserick, Richards & Co.

**Cotton Softeners.**
Bosson & Lane.
Warren Soap Mfg. Co.

**Cotton Waste.**
Becker, C. W.
Blaisdell, S., Jr., Co.
Charles, W. B.
Greaves, Frank B.

**Crayons.**
Dixon, Jos., Crucible Co.
Lowell Crayon Co.

**Cutter for Knit Goods.**
Eastman Machine Co.
Langston, Samuel M.

**Cutting Machinery.**
Eastman Machine Co.

**Dating and Time Stamps.**
Riggs & Brothers.

**Dextrine.**
Stein, Hirsh & Co.

**Dobbies.**
Crompton & Knowles Loom Works.
Crompton-Thayer Loom Co.

**Drawing Rolls.**
Hood, R. H.
Metallic Drawing Roll Co., The.

**Dryers.**
American Blower Co.
American Drying Machinery Co.
Arlington Mch. Wks (Arthur Birch, prop.)
Birch, Arthur, Arlington Machine Works.
Boston Blower Co.
Buffalo Forge Co.
Butterworth, H W. & Sons Co.
Hunter, Jas., Machine Co.
Kenyon, D. R. & Son.
Mass. Fan Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sargent's, C. G., Sons.
Sturtevant, B F., Co.
Textile Finishing Machinery Co.
Whiteley, William, & Sons, Ltd.
Whittle, Jas H.
Vacuum Process Co.

**Drying Boards.**
Bull, William C.
Pearson, J. T.

**Dusters.**
——See Wool and Waste Dusters.

**Dust Collectors.**
Allington & Curtis Mfg. Co.
Philadelphia Drying Machinery Co.

**Dyers, Bleachers and Finishers.**
Brophy's, T., Sons.
Cranston Worsted Mills (yarns).
Davidson, J. F.
Firth & Foster Co.
Greenwood, R. & Bault.
Home Bleach & Dye Works.
Ingrahamville Dye Works.
Keystone Fast Black Dye Works.
Lawrence Dye Works.
Lorimer's, The Wm. H. & Sons Co.
Maryland Bleach & Dye Works.
Molt Bros. (Indigo Blue).
Pawtucket Dyeing & Bleaching Co.
Phoenix Steam Dye Works.
Providence Mills Mfg. Co.
Rowland, Samuel.
Vacuum Dyeing Machine Co.

**Dyeing, Drying, Bleaching and Finishing Machinery.**
American Blower Co.
American Drying Machinery Co.
Arlington Mch. Wks. (Arthur Birch, prop.)
Birch, Arthur, Arlington Machine Works.
Buffalo Forge Co.
Butterworth, H. W. & Sons Co.
Curtis & Marble Machine Co.
Entwistle, T. C., Co.
Fabric Measuring & Packaging Co.
Fearon, E., Co.
Gessner, David.
Heathcote, John & Son.
Hopkins Machine Works.
Kenyon, D. R. & Son.
Klauder-Weldon Dyeing Machine Co.
Leigh, Evan A.
Leyland, Thos. & Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Smith, Drum & Co.
Smith's, John E., Sons.
Stiner, Frank.
Sturtevant, B. F., Co. (Drying).
Textile Finishing Machinery Co.
Vacuum Process Co.
Whiteley, William, & Sons, Ltd.
Whittle, Jas. H.

**Dye House Cans.**
Hill, James, Mfg. Co.

**Dye Sticks.**
Bailey, Frank.
Haedrich, E. M.

**Dyestuffs and Chemicals.**
Atteaux, F. E. & Co.
Berlin Aniline Works.
Bischoff & Co.
Bosson & Lane.
Cassella Color Co.
Grasselli Chemical Co.
Kalle & Co.
Farbenfabriken of Elberfeld Co.
Ford, J. B., Co.
Geigy Aniline & Extract Co.
Geisenheimer & Co.
Johnson, Chas. A. & Co.
Kuttroff, Pickhardt & Co.
Leyland, Thos. & Co.
Metz, H. A. & Co.
Molt Bros. (Indigo Blue).
Nicol, J. M. & J. S.
Roessler & Hasslacher Chemical Co.
Selling Co., The.
Solvay Process Co.
Sykes & Street.
Thayer, Ed. M.
Vila, H. S.

**Dynamos and Motors.**
Allis Chalmers Company.
General Electric Co.
Mechanical Appliance Co.
Sturtevant, B. F., Co.

**Edgings.**
——See Tapes, Braids and Edgings.

**Electrical Construction.**
Allis Chalmers Company.
General Electric Co.
Mechanical Appliance Co.
Sturtevant, B. F., Company.
Westinghouse Electric & Mfg. Co.

**Electric Cloth Cutter.**
Eastman Machine Co.

**Electric Fans.**
American Blower Co.
Buffalo Forge Co.
General Electric Co.
Mass. Fan Co.
Mechanical Appliance Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

**Electric Lamps.**
Sturtevant, B. F., Company.

**Electric Lighting.**
Allis Chalmers Company.
General Electric Co.
Sturtevant, B. F., Company.
Westinghouse Electric & Mfg. Co.

**Electric Motors.**
Allis Chalmers Company.
Crocker-Wheeler Co.
General Electric Co.
Mechanical Appliance Co.
Sturtevant, B. F., Company.
Westinghouse Electric & Mfg. Co.

**Elevators.**
Cohoes Foundry & Machine Co.
Jeffrey Manufacturing Co.
Morse, Williams & Co.
Salem Elevator Works.

**Employees' Time Recorders.**
Pettes & Randall Co.
Riggs & Brothers.

**Engravers.**
Smith Bros.

**Exhaust Heads.**
Sturtevant, B. F., Co.

**Expert Accountants.**
Garry, Brown & Co.

**Fans—Exhaust and Ventilating.**
——See Ventilating Apparatus.

**Fans.**
Green Fuel Economizer Co.

**Feed Water Heaters.**
Green Fuel Economizer Co.
Scaife, W. B. & Sons.

**Feed Water Pumps.**
Goulds Mfg. Co.
Scaife, W. B. & Sons.

**Feed Water Purifiers.**
Philadelphia Water Purification Co.

**Feeds.**
——See Automatic Feeds.

**Filters.**
Norwood Engineering Co.
Phila. Water Purification Co., The.
Roberts Filter Co.
Scaife, W. B. & Sons.

**Finishing Machinery.**
——See Dyeing, Drying, Bleaching and Finishing.

**Fire Box Blocks, "Steel Mixture."**
McLeod & Henry Co.

**Fire Brick.**
Borgner, Cyrus, Co.
McLeod & Henry.

**Fire Extinguishers.**
Badger, E. B. & Sons Co.

**Fire Hose.**
Eureka Fire Hose Co.

**Fire Hydrants.**
Norwood Engineering Co.

**Fire Proof Doors and Windows.**
Badger, E. B., & Sons Co.
Lupton's, David, Sons Co.

**Flax, Tow, Hemp and Jute Machinery.**
Fairbairn-Lawson-Combes-Barlour, Ltd.
Haskell-Dawes Mach. Co.
Leigh, Evan A.

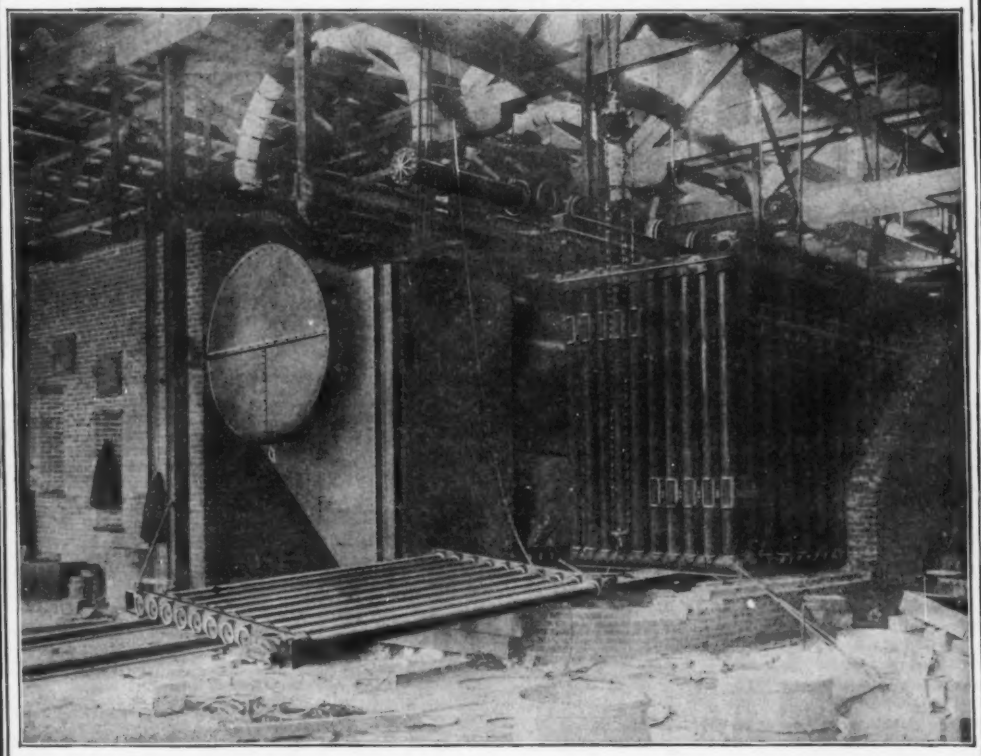
**Fluted Rolls.**
Hood, R. H.
Leigh, Evan A.
Riley, C. E. & Co.
Thurston, A. G & Son

**Alphabetical Advertising Index, with page numbers, follows this list.**

# ALL BOILER PLANTS

**Of 50 H. P. and over need**

# STURTEVANT ECONOMIZERS



**These machines, with their patent system of "staggered pipes," are increasing the temperature of the feed water 150 and 175°; in some cases water is leaving the economizers at 320°.**

**They are saving 10 to 20 per cent. in fuel, increasing the capacity of boiler plants 20 to 40 per cent. and prolonging the life of boilers materially.**

**In one month Sturtevant Economizers were sold for boiler plants aggregating over 12,000 H. P., in New England alone. Send for catalogue and more information.**

**B. F. STURTEVANT CO., Boston, Mass.**

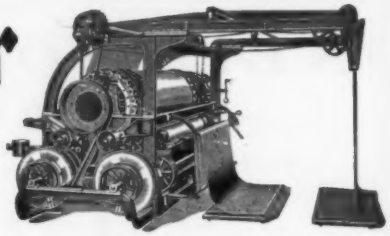
**General Office and Works, Hyde Park, Mass.**

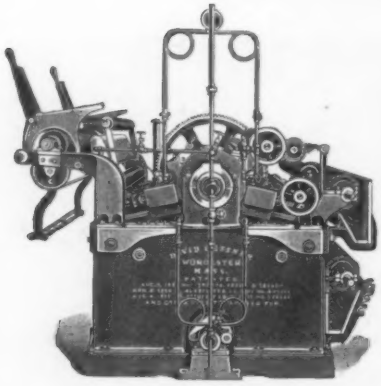
**New York Philadelphia Chicago London**

403

# David Gessner

## Worcester, Mass.

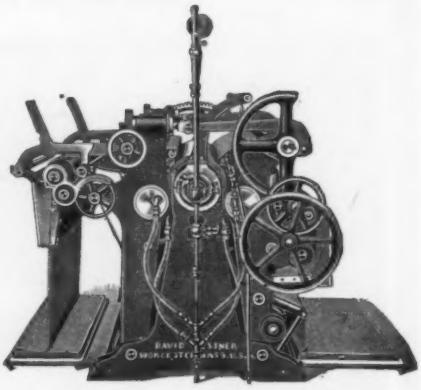




**Latest Improved Cloth Finishing Machinery**

—

**Napping Machines and Presses a Specialty**




**Flyers.**
Leigh, Evan A.
Textile Machinery Co.

**Forges.**
Buffalo Forge Co.
Sturtevant, B. F., Co.

**Forwarders.**
McKeon, John F.

**Friction Clutches.**
—See Clutches.

**Friction Cones.**
Evans, G. Frank.

**Fuel Economizers.**
Green Fuel Economizer Co.

**Furnace for Boilers.**
Harris, J. B.

**Fulling Mills for Woolen Goods.**
Hopkins Machine Works.
Hunt, Rodney, Machine Co.
Hunter, Jas., Machine Co.
Kenyon, D. R. & Son.

**Garnetts.**
Leigh, Evan A.
Philadelphia Textile Machinery Co.

**Gas Engines.**
Jones, Lewis.

**Gas Exhausters.**
Sturtevant, B. F., Co.

**Gauges.**
Crosby Steam Gage & Valve Co.
Lunkenheimer Co.
Walworth Manufacturing Co.

**Gears.**
New Process Raw Hide Co.

**Gear Cutting Machine.**
Whiton, The D. E., Co.

**Generating Sets.**
Buffalo Forge Co.
Sturtevant, B. F., Co.

**Grids for Cotton Openers.**
Schaellibaum, Robert, Company.

**Heating.**
—See Ventilating.

**Heddles.**
Steel Heddle Mfg. Co.
Stoddard, Haserick, Richards & Co.

**Hosiery Printer.**
Bray, John.

**Hoists and Hoisting Machinery.**
Larrabee, John E.

**Humidifying Apparatus.**
American Air Moistening Co.

**Hydro Extractors.**
American Tool & Machine Co.
Riley, C. E. & Co.
Stoddard, Haserick, Richards & Co.
Textile Finishing Machinery Co.
Whiteley, William, & Sons, Ltd.
Whittle, Jas. H.

**Injectors.**
Lunkenheimer Co.

**Ironing Machines for Knit Goods.**
Craw, J. W., Laundry Machinery Co.

**Jacquards.**
Halton's, Thomas, Sons.

**Knit Goods, Edgings, Trimmings, Etc.**
Cathcart, John & Co.
Chapin, Geo. W.
Charles, W. B.
Cheney Bros.
Friedberger Mfg. Co.
Hepner & Horwitz.
International Button Co.
Krout & Fite Mfg. Co.
Weimar Bros.

**Knit Goods, Finishing Machines, Crochet, Etc.**
Bridoux, Charles H.
Craw, J. W., Laundry Machinery Co.
Eastman Machine Co.
Langston, Samuel M.
Merrow Machine Co., The.
Nye & Tredick Co.
Scott & Williams.
Union Special Machine Co.
Willcox & Gibbs Sewing Machine Co.

**Knitting Machine Cylinders.**
Branson Machine Co.
Paxton & O'Neill.
Stafford & Holt.
Stanton & Lewis.

**Knitting Machinery.**
Boss Knitting Machine Co.
Branson Machine Co.
Brinton, H. & Co.
Claes & Flentje.
Cooper, Chas.
Crane Mfg. Co.
Excelsior Knitting Machine Mfg. Co.
Grosser Knitting Machine Co.
Jenckes, E., Mfg. Co.
Jones, Lewis.
Lamb Knitting Mach. Mfg. Co.
Leighton Machine Co.
Mayo, Geo. D., Knitting Machine Co.
Mayo Knitting Machine & Needle Co.
McMichael, A.
National Automatic Knitter Co.
Newton, E. A.
Nye & Tredick Co.
Paxton & O'Neill.
Quaker City Stop Motion Co.
Rheinauer, D., & Co.
Richter, Wolfgang.
Scott & Williams.
Seyfert & Donner.
Stafford & Holt.
Standard Machine Co.
Taylor, James.
Tompkins Bros.
Walther, Otto.
Wildman Mfg. Co.

**Knitting Needles and Supplies.**
Branson Machine Co.
Breedon's, Wm., Son.
Brinton, H. & Co.
Cooper, Chas.
Corey, Wm. Co.
Crane Mfg. Co.
Dodge Needle Co.
Gormley, R. W. & Co.

**Alphabetical Advertising Index, with page numbers, follows this list.**

The New

# Crompton-Thayer Loom Company

.. MANUFACTURERS OF ..

## FANCY LOOMS

For Weaving Worsted and Woolen, Fancy Cottons and Silk Fabrics.

Dobbies, Box Motions and Supplies.

WORKS AND OFFICES:

677 Cambridge Street, Worcester, Mass.


Knitting Needles and Supplies – cont.
Grosser Knitting Machine Co.
Ives, Loyal T.
Kolb, Frank E.
Lamb Knitting Machine Mfg. Co.
Manufacturers' Supplies Co.
Mayo Knitting Machine & Needle Co.
Page Needle Co.
Rheinhauer, D. & Co.
Treat, Orion.
Wardwell Needle Co.

**Labeling Machines.**
Beck, Chas., Paper Co., Ltd.

**Lamps, Incandescent.**
General Electric Co.
Sawyer-Mann Electric Co.
Westinghouse Electric & Mfg. Co.

**Lathes.**
McCabe, J. J.

**Leather.**
Houghton, E. F., Co.

**Logs and Lumber.**
Bass, E. L.

**Loom Pickers.**
Garland Mfg. Co.

**Looms.**
Crompton & Knowles Loom Works.
Crompton-Thayer Loom Co.
Draper Company.
Kilburn, Lincoln & Co.
Leigh, Evan A.
Lowell Machine Shop.
Mason Machine Works.
Stoddard, Haserick, Richards & Co.
Whitin Machine Works.

**Loopers.**
Hepworth, John W. & Co.
Leighton Machine Co.

**Lubricators.**
Borne, Scrymser Co.
Dixon, Jos., Crucible Co.
Lunkenheimer Co.

**Lumpers.**
Gerry, George & Son.
Schofield, Wm. Co.

**Machinery Dealers.**
Fearon, E., Co.
Jefferson, Ed. & Bro.
Lamb, J. K., Textile Mach. Co.
Schofield, Geo. L.
Stead, Arthur
Taylor, James.

**Machinists' Tools.**
Curtis & Marble Machine Co.
McCabe, J. J.
Whiton, The D. E. Co.

**Mails.**
Walder, J.

**Measuring and Folding Machines.**
Elliott & Hall.
Fabric Measuring & Packaging Co.

**Mechanical Draft.**
American Blower Co.
Boston Blower Co.
Buffalo Forge Co.
Green Fuel Economizer Co.
Massachusetts Fan Co.
Sturtevant, B. F., Co.

**Mechanical Engineers.**
American Blower Co.
Buffalo Forge Co.
Dean & Main.
Philadelphia Drying Machinery Co.
Sturtevant, B. F., Co.
Suck, Adolph.

**Mercerizers.**
Greenwood & Bault, R.
Home Bleach & Dye Works.
Lorrimer, Wm. H., Sons Co.
Maryland Bleach & Dye Works.

**Mercerizing Machinery.**
Arlington Mch. Wks. (Arthur Birch, prop.)
Butterworth, H. W., & Sons.
Klauder-Weldon Dyeing Machine Co.
Smith, Drum & Co.
Textile Finishing Machinery Co.
Whiteley, William, & Sons, Ltd.

**Metallic Fire-proof Window Frames and Sashes.**
Badger, E. B., & Sons Co.
Lupton's, David, Sons Co.

**Mill Architects.**
—See Architects and Mill Engineers.

**Mill Brushes.**
—See Brushes.

**Mill Builders and Engineers.**
Ferguson, John W.

**Mill Sewing Machines.**
—See Sewing Machines and Supplies.

**Mill Supplies.**
American Supply Co.
Bamford & Smith.
Barker, James.
Buckley's, Benj., Son., Gun Mill.
Crosby Steam Gage and Valve Co.
Dixon Lubricating Saddle Co.
Easton-Burnham Co.
Eureka Fire Hose Co.
Garland Mfg. Co.
Houghton, E. F., Co.
Jefferson, Ed., & Bro.
Jeffrey Manufacturing Co.
Kolb, Frank E.
Lane, W. T., & Bro.
Larrabee, John E.
Leigh, Evan A.
Main Belting Co.
Morris & Co.
Murphy, E. W., & Co.
Philadelphia Drying Machinery Co.
Putnam & Co.
Rheinhauer, D. & Co.
Riley, C. E., & Co.
Richardson Bros.
Shaw, Victor, Ring Traveler Co.

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**Mill Supplies—cont.**
Stephenson Mfg. Co.
Stoddard, Haserick, Richards & Co.
Thurston, A. G., & Son.
Tucker, W. W. & C. F.
Ward & Vandegrift.
Walworth Manufacturing Co.

**Motors.**
—See Electric Motors.

**Napping Machinery.**
American Napping Machine Co.
Curtis & Marble Machine Co.
Cessner, David.
Jones, Lewis.
Leigh, Evan A.
Parks & Woolsen Machinery Co.
Whiteley, William, & Sons, Ltd.

**Noils (Silk).**
Malcolm Mills Co.
Ryle, Wm., & Co.

**Oil Cups.**
Lunkenheimer Co.
Walworth Manufacturing Co.

**Oils.**
Borne, Scrymser Co.
Murphy, E. W., & Co.
New York & New Jersey Lubricant Co.
Stephenson Mfg. Co.

**Oil Hole Covers.**
Tucker, W. W. & C. F.

**Overhead Tracks.**
Cohoes Foundry & Machine Co.
Putnam & Co.

**Overseaming Machines.**
Merrow Machine Co.
Willcox & Gibbs Sewing Machine Co.

**Paint.**
Standard Paint Co.

**Pantagraphs for Mill Engraving.**
Johnson, C. A., & Co.

**Paper.**
Richardson Bros.
Smyth, J. L. N. Paper Co.

**Paper Boards.**
Shryock, J. K.
Smyth, J. L. N. Paper Co.

**Paper Box Machinery.**
Beck Chas. Paper Co., Ltd.
Langston, Samuel M.

**Patent Solicitors.**
Crosby & Gregory.
Howson & Howson.

**Perforated Metals.**
Allis-Chalmers Co.
Beckley, A. J., & Co.

**Peroxide of Sodium.**
Roessler & Hasslacher Chemical Co.

**Pipes and Fittings.**
Pancoast, Henry B., & Co.
Walworth Manufacturing Co.

**Pneumatic Conveying.**
—See Ventilating.

**Power Transmission Machinery.**
Allis-Chalmers Co.
American Drying Machinery Co.
American Mfg. Co.
American Pulley Co.
Carlyle-Johnson Machine Co.
Cohoes Foundry & Machine Co.
Columbian Rope Co.
Evans, G. Frank.
Hunter, Jas., Machine Co.
Jeffrey Manufacturing Co.
Kilburn, Lincoln & Co.
Houghton, E. F., Co.
Philadelphia Drying Machinery Co.
Reeves Pulley Co.
Saginaw Manufacturing Co.
Schofield, Wm., Co.
Sellers, William, & Co.
Standard Pressed Steel Co.
Textile Finishing Machinery Co.

**Preparatory Machinery (Cotton).**
Atherton, A. T., Mach. Co.
Howard & Bullough Am. Machine Co.
Kitson Machine Co.
Leigh, Evan A.
Riley, C. E., & Co.
Saco & Pettee Machine Shops.

**Presses.**
Boomer & Boschert Press Co.
Butterworth, H. W., & Sons Co.
Curtis & Marble Machine Co.
Gessner, David.
Hart, Charles.
Miller Press & Machine Co.
North Chelmsford Machine Co.
Spence & Rideout.
Textile Finishing Machinery Co.
Woonsocket Machine & Press Co.

**Pressers and Flyers.**
Baker Machine Co.

**Pressure Regulators.**
Crosby Steam Gage & Valve Co.
Mason Regulator Co.
Walworth Mfg. Co.

**Public Accountants.**
Garry, Brown & Co.

**Pulleys.**
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**Pulley Covering.**
Warren Company, The.

**Pumps.**
Allis-Chalmers Co.
Goulds Mfg. Co.
Knowles Steam Pump Works.
Textile Finishing Machinery Co.

**Pump Governors.**
Crosby Steam Gage & Valve Co.
Mason Regulator Co.
Walworth Mfg. Co.

**Purifying & Filtration Plants.**
Norwood Engineering Co.
Philadelphia Water Purification Co.
Roberts Filter Co.
Scaife, W. B., & Sons.

**Quillers.**
Foster Machine Co.
North Chelmsford Machine Co.
Payne, G. W., & Co.

**Rag Pickers.**
Philadelphia Textile Machinery Co.
Schofield, Wm., Co.

**Ramie Tops and Noils.**
Tierney, Frank A.

**Raw Hide Gears.**
New Process Raw Hide Co.

**Reed and Harness Manufacturers.**
American Supply Co.
Garland Mfg. Co.
Walder, J.

**Reels.**
North Chelmsford Machine Co.

**Reducing Valves.**
Crosby Steam Gage & Valve Co.
Mason Regulator Co.
Walworth Mfg. Co.

**Regulators (Pressure).**
Crosby Steam Gage & Valve Co.
Mason Regulator Co.
Walworth Mfg. Co.

**Remnants.**
Feingold, H. & D.

**Ribbons.**
Barton, F. C.
Cheney Bros.

**Ring Travelers.**
Shaw, Victor, Ring Traveler Co.

**Roller Leather.**
Houghton, E. F., Co.

**Roofing.**
Lincoln Water Proof Cloth Co.
Standard Paint Co.

**Rope.**
American Mfg. Co.
Columbian Rope Co.

**Rope Transmission.**
American Mfg. Co.
Columbian Rope Co.

**Rope and Twine Machinery.**
Haskell-Dawes Machine Co., The.

**Roving Cans.**
Hill, James, Mfg. Co.

**Ruberoid Roofing.**
Standard Paint Co.

**Saddles and Stirrups.**
Dixon Lubricating Saddle Co.

**Scallop Machines.**
Merrow Machine Co.

**Schools.**
Lowell Textile School.
New Bedford Textile School.
Philadelphia Textile School.

**Secondhand Machinery.**
—See Mchry. Dealers also classified ads.

**Screens (Perforated).**
—See under Perforated Metal.
—See Commission Merchants.
—See Commission Merchants.

**Separators.**
Draper Co., The.

**Sewing Machines and Supplies.**
Arlington Mch. Wks. (Arthur Birch, prop.)
Bridoux, Charles H.
Curtis & Marble Machine Co.
Dinsmore Mfg. Co.
Fales, L. F.
Manufacturers' Supplies Co.
Textile Finishing Machinery Co.
Union Special Machine Co.
Willcox & Gibbs Sewing Machine Co.

**Shafting, Hangers, Etc.**
—See Power Transmission Machinery.

**Shearing Machinery.**
—See Dyeing, Drying, Bleaching and Finishing.

**Sheet Metal Work.**
Barney Ventilating Fan Works.
Lupton's, David, Sons Co.

**Shell Rolls.**
Thurston, A. G., & Son.

**Shoddies.**
—See Wool Shoddies.

**Shuttles.**
—See Bobbins, Spools, Shuttles, Etc.

**Silk Machinery.**
Arlington Mch. Wks. (Arthur Birch, prop.)
Butterworth, H. W., Sons Co.
Leigh, Evan A.
Mason Machine Works.
Stoddard, Haserick, Richards & Co.
Textile Finishing Machinery Co.

**Silk Mill Supplies.**
Hall, I. A., & Co.

**Silk Noils.**
Fawcett, Hughes.

**Singe Plates.**
Arlington Mch. Wks. (Arthur Birch, prop.)
Butterworth, H. W., Sons Co.
Taunton, New Bedford Copper Co.
Textile Finishing Machinery Co.

**Singeing Machines.**
Arlington Mch. Wks. (Arthur Birch, prop.)
Butterworth, H. W., Sons Co.
Curtis & Marble Machine Co.
Firth, William, Company.
Knapp, Charles H.
Leigh, Evan A.
Smith, Drum & Co.
Stubbs, Joseph.
Textile Finishing Machinery Co.

**Sizing, Starch and Gums.**
Arabol Mfg. Co.
Nicol, J. M. & J. S.
O. K. Soap Co.
Stein, Hirsch & Co.

**Skylights.**
Bickelhaupt, G., Skylight Works.
Lord & Burnham Co.
Lupton's, David, Sons Co.

**Slashers.**
Cohoes Foundry & Machine Co.
Leigh, Evan A.
Lowell Machine Shop.
Riley, C. E., & Co.

**Alphabetical Advertising Index, with page numbers, follows this list.**

# BEST FOR MILLS

STANDARD FOR 13 YEARS
IN MILL, FACTORY, FOUNDRY
AND ALL CONSTRUCTION.

Finely suited to roofs subject to severe usage. Water-proof, acid and alkali-proof. Not injured by great heat, vibration, gases or smoke. Outlasts metal and costs less.

The genuine has the name
"RUBEROID"
plainly stamped on the under side every four feet.

Manufactured solely by
THE STANDARD PAINT CO.
100 William St., .. NEW YORK.

# RUBEROID ROOFING
(Trade Mark Registered)


**Soaps.**
Allen, Sherman & Co.
India Alkali Works.
Nicetown Mfg. Co.
O. K. Soap Co.
Tully, J. J.
Warren Soap Mfg. Co.

**Spindles.**
Bamford & Smith.
Buckley, Benjamin, Sons, Gun Mill
Draper Company.
Easton-Burnham Co.
Leigh, Evan A.
Riley, C. E., & Co.
Stoddard, Haserick, Richards & Co.
Ward & Vandegrift.
Whitin Machine Works.

**Spindle Tubes.**
Bamford & Smith.
Riley, C. E., & Co.
Stoddard, Haserick, Richards & Co.

**Spinning Frames.**
——See Cotton Machinery.

**Spinning Rings.**
Draper Company.
Whitinsville Spinning Ring Co.

**Spinning Tubes.**
Buckley, Benjamin, Sons.

**Spools.**
——See Bobbins, Spools, Shuttles, Etc.

**Spoolers.**
Draper Company.
Easton & Burnham Machine Co.
Lindsay, Hyde & Co.
Payne, George W., & Co.

**Stamps for Hosiery.**
Wells, Wilfred.

**Steam Boilers.**
Wickes Bros.

**Steam Boiler Insurance.**
Hartford Steam Boiler Inspection & Insurance Co.

**Steam Engines.**
Allis-Chalmers Co.
American Blower Co.
Arlington Mch. Wks. (Arthur Birch, prop.)
Atlas Engine Works.
Buffalo Forge Co.
Fishkill Landing Machine Co.
Harrisburg Foundry & Machine Co.
Hooven (The), Owens & Rentschler Co.
Sturtevant, B. F., & Co.
Textile Finishing Machinery Co.

**Steam Jacket Kettles.**
Badger, E. B., & Sons Co.

**Steam Pumps.**
Goulds Manufacturing Co., The.

**Steam Specialties.**
Butterworth, H. W., Sons Co.
Crosby Steam Gage and Valve Co.
Houghton, E. F., Co.
Lunkenheimer Co.
Mason Regulator Co.
Sturtevant, B. F., Co.
Textile Finishing Machinery Co.
Walworth Manufacturing Co.

**Steam Traps.**
Albany Steam Trap Co.

**Stop Motion for Looms.**
——See Warp Stop Motions.

**Stop Motion for Knitting Machines.**
Quaker City Stop Motion Co.

**Tanks, Tubs and Vats.**
Caldwell, W. E., Co.
Cypress Lumber Co.
Hall, Amos H., Son & Co.
Lewis, H. F., & Co.
North Chelmsford Machine Co.
Smith's, John E., Sons.
Stevens, D. B., & Co.
Textile Finishing Machinery Co.
Woolford, George, Tank and Vat Mfg. Co.

**Tapes, Braids and Edgings.**
Barton, F. C.
Cathcart, John, & Co.
Chapin, George W.
Friedberger Mfg. Co.
Hoffman, DeWitt & McDonough.
Krout & Fite Mfg. Co.
Weimar Bros.

**Telephones.**
North Electric Co.
Pettes & Randall Co.

**Temples.**
Draper Co.

**Tentering Machines.**
——See Dyeing, Bleaching Machinery, Etc.

**Tenter Clips.**
——See Dyeing, Drying, Bleaching and Finishing Machinery.

**Textile Schools.**
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**Thread Board for Spinning & Twisting Frames.**
Houghton, L. T.

**Ticketing Machinery.**
——See Labeling Machines.

**Trucking.**
McKeon, John F.

**Turbines.**
——See Water Wheels.

**Twine.**
American Mfg. Co.
Richardson Bros.

**Twine Machinery.**
Haskell-Dawes Machine Co.

**Twisting Machinery.**
Philadelphia Textile Machinery Co.
Whittle, Jas. H.

**Valves.**
Crosby Steam Gage & Valve Co.
Lunkenheimer Co.
Mason Regulator Co.
Schutte & Koerting Co.
Walworth Mfg. Co.

**Ventilating Apparatus.**
Allington & Curtis Mfg. Co.
American Air Moistening Co.
American Blower Co.
American Drying Machinery Co.
Barney Ventilating Fan Works.
Bell Pure Air & Cooling Co.
Berry, A. Hun.
Boston Blower Co.
Buffalo Forge Co.
Lord & Burnham Co.
Massachusetts Fan Co.
Nichols, E. M.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sargent's, C. G., Sons.
Schnitzler, Chas. H.
Sturtevant, B. F., Co.

**Warpers.**
Draper Company.

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# CATCH THE DUST

IN YOUR MILL OR FACTORY BY USING AN

ALLINGTON OR MARSHALL

Dust Collecting System

ALLINGTON & CURTIS MANUFACTURING CO., Saginaw, Mich.

ANALYSES OF WATER, COAL, SIZES, OILS, SOAPS, CHEMICALS AND MILL SUPPLIES GENERALLY.

PRIVATE TELEPHONE EXCHANGE, 3312 MAIN.

LITTLE & WALKER,

CHEMISTS,

93 BROAD ST., BOSTON.

SPECIALISTS IN THE CHEMISTRY OF FIBRES AND TEXTILE PROCESSES.

EXPERTS IN PATENT CAUSES.

REPORTS ON BLEACHING, DYEING AND FINISHING PROCESSES AND PLANTS.

**Warping and Beaming Machinery.**
Draper Co.
Entwistle, T. C., Co.
Philadelphia Textile Machinery Co.
Whiteley, William, & Sons, Ltd.

**Warp Stop Motions.**
Coldwell-Gildard Co.
Draper Co.
Textile Appliances, Ltd.

**Washers (Cloth).**
Arlington Mch. Wks. (Arthur Birch, prop.)
Birch, Arthur, Arlington Machine Wks
Butterworth, H. W., & Sons Co.
Hunt, Rodney, Machine Co.
Hunter, Jas., Machine Co.
Kenyon, D. R., & Son.
Philadelphia Drying Machinery Co.
Textile Finishing Machinery Co.

**Washing Soda.**
Ford, J. B., Co.

**Watchman's Clocks.**
Nans & Co.
Pettes & Randall Co.
Riggs & Brothers.

**Water Purifiers & Filters.**
Philadelphia Water Purification Co.
Scaife, W. B., & Sons.

**Water Softeners.**
Philadelphia Water Purification Co.

**Water Towers.**
Caldwell, W. E., Co.
Stevens, D. B., & Co.

**Water Wheels.**
Hunt, Rodney, Machine Co.
Leffel, James, & Co.
Risdon-Alcott Turbine Co.
Smith, S. Morgan, Co.

**Water Wheel Governors.**
Cohoes Foundry & Machine Co.
Leffel, James, & Co.
Replogle Governor Works.

**Whistles.**
Lunkenheimer Co.

**Winders.**
Altemus, J. K.
Easton & Burnham Machine Co.
Foster Machine Co.
Leigh, Evan A.
Lindsay, Hyde & Co.
Payne, George W. & Co.
Universal Winding Co.
Whiteley, William, & Sons, Ltd.

**Winders (Back).**
Taylor, James.

**Winders (Ball).**
North Chelmsford Machine Co.

**Wire Stitching Machines.**
Beck, Chas., Paper Co., Ltd.

**Winders (Hosiery).**
Altemus, Jacob K.
Easton & Burnham Machine Co.
Foster Machine Co.
Leighton Machine Co.
Payne, G. W., & Co.
Universal Winding Co.

**Wood Pulleys.**
Reeves Pulley Co.
Saginaw Manufacturing Co.

**Wool.**
Stoddard, Haserick, Richards & Co.
Tierney, Frank A.

**Wool and Waste Dusters.**
Leigh, Evan A.
Philadelphia Textile Machinery Co.
Sargent's, C. G., Sons.
Schofield, Wm., Co.
Whittle, Jas. H.

**Wool Cleaning Compound.**
Ford, J. B., Co.
India Alkali Works.

**Wool Combing Machinery.**
Crompton & Knowles Loom Works.
Leigh, Evan A.
Riley, C. E., & Co.
Stoddard, Haserick, Richards & Co.

**Woolen and Worsted Machinery.**
Altemus, Jacob K.
American Drying Machinery Co.
American Tool & Machine Co.
Arlington Mch. Wks. (Arthur Birch, prop.)
Barker, James.
Birch, Arthur, Arlington Machine Wks.
Butterworth, H. W., Sons Co.
Crompton & Knowles Loom Works.
Crompton-Thayer Loom Co.
Curtis & Marble Machine Co.
Fales, L. F.
Firth, William, Co.
Gessner, David.
Harwood, Geo. S., & Son.
Hood, R. H.
Hunt, Rodney Machine Co.
Hunter, Jas., Machine Co.
Jefferson, Ed., & Bro.
Kenyon, D. R., & Son.
Leigh, Evan A.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Riley, C. E., & Co.
Sargent's, C. G., Sons.
Schofield, Geo. L.
Schofield, William, Co.
Stiner, Frank.
Stoddard, Haserick, Richards & Co.
Textile Finishing Machinery Co.
Vacuum Dyeing Machine Co.
Whiteley, William, & Sons, Ltd.
Whittle, Jas. H.
Woonsocket Machine & Press Co.

**Wool, Non-shrinking Process for.**
Heyer, Charles H.

**Wool Oiling Apparatus.**
Harwood, Geo. S., & Son.

**Wool Oils.**
Borne, Scrymser Co.

**Wool Shoddies.**
Becker, C. W.
Riverdale Woolen Co.
Slack, Wm. H. H., & Bro.

**Wool Washing, Preparing and Drying Machinery.**
American Drying Machinery Co.
Hunter, Jas., Machine Co.
Leigh, Evan A.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Riley, C. E., & Co.
Sargent's, C. G., Sons.
Stoddard, Haserick, Richards & Co.

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# On your hardest drives

ON your carders, nappers or strippers, running over small pulleys at high speed, is where we want you to try **Shultz "SABLE" Rawhide Belting.** It has a kid-like surface which makes perfect adhesion to the pulleys. Underneath this is the long, unseparated, unbroken fibre of the rawhide—for strength. This, combined with its great pliability, enables us to guarantee "SABLE" to transmit a third more power, increase your production, and outwear the best Oak-Tanned made to-day.

Booklet No. 6 tells the story.

**Shultz Belting Company, St. Louis, Mo.**

NEW YORK, 113 Liberty Street.
BOSTON, MASS., 114 High Street.
PHILADELPHIA, PA., 116 N. 3rd Street.

## YARN, THREADS, ETC.

**Banding.**
Moore, C., & Co.
Sternberg, Fred, & Co.
Toohey, M. J., & Co.

**Cotton Yarns.**
American Cotton Yarn Exchange.
Ballou Yarn Co.
Catlin & Co.
Chapin, Geo. W.
Charles, W. B.
Dana Warp Mills.
Eddy & Street.
Grant Yarn Co.
Greene & Daniels Mfg. Co.
Harding, Whitman & Co.
Indian Orchard Co.
Jenckes Spinning Co.
Lorimer, E. D.
Mitchell, Jas. E., & Co.
Moeller & Littauer.
Montgomery, J. R., Co.
Monument Mills.
Orswell Mills.
Paulson, Linkroom Co.
Salkeld, A. D., & Bro.
Sternberg, Fred, & Co.
Strouse, Theo. H., & Co.

**Flax, Hemp, Jute and Ramie.**
Fawcett, Hughes.
Moeller & Littauer.
Sternberg, Fred, & Co.
Tierney, F. A.

**Gassed Yarns.**
Ballou Yarn Co.
Greene & Daniels Mfg. Co.
Harding, Whitman & Co.
Lorimer, E. D.
Moeller & Littauer.
Sternberg, Fred, & Co.

**Glazed Yarns.**
Ballou Yarn Co.
Chapin, Geo. W.
Harding, Whitman & Co.
Indian Orchard Co.
Lorimer's, Wm. H., & Sons Co.
Malcolm Mills Co.
Moeller & Littauer.
Orswell Mills.
Salkeld, A. D., & Bro.
Skerry, A. T., & Co.
Sternberg, Fred, & Co.
Strouse, Theo. H., & Co.
Walcott & Campbell Spinning Co., New York Mills.

**Harness Twine.**
Ballou Yarn Co.
Cranston Worsted Mills.
Fawcett, Hughes.
Moore, C., & Co.
Sternberg, Fred, & Co.

**Hosiery and Knitting Yarns.**
Boyer, B. F., Co.
Cranston Worsted Mills.
Chapin, George W.
Greene & Daniels Mfg. Co.
Harding, Whitman & Co.
Hyde, E. S.
Jenckes Spinning Co.
Mitchell, James E., & Co.
Moeller & Littauer.
Monument Mills.
Queensbury Mills.
Skerry, A. T., & Co.
Sternberg, Fred, & Co.

**Mercerized Yarns.**
Harding, Whitman & Co.
Harper, E. G.
Indian Orchard Co.
Lorimer, E. D.
Lorimer, Wm. H., & Sons Co.
Moeller & Littauer.
Montgomery, J. R., & Co.
Sternberg, Fred, & Co.
Strouse, Theo. H., & Co.

**Mohair Yarns.**
Cranston Worsted Mills.
Harding, Whitman & Co.
Moeller & Littauer.
Montgomery, J. R., & Co.

**Novelty Yarns, Tinsels, Silk Noils, Etc.**
Cranston Worsted Mills.
Indian Orchard Co.
Jenckes Spinning Co.
Malcolm Mills Co.
Moeller & Littauer.
Montgomery, J. R., & Co.
Skerry, A. T., & Co.
Sternberg, Fred & Co.

**Silk Noils.**
Tierney, F. A.

**Silk Yarns.**
Chapin, Geo. W.
Cheney Bros.
Eddy & Street.
Ryle, Wm., & Co.

**Woolen and Merino Yarns.**
Boyer, B. F., Co.
Eaton Rapids Woolen Mills.
Eddy & Street.
Harper, E. J.
Hyde, E. S.
Jenckes Spinning Co.
Moeller & Littauer.
Rockwell, E. M.
Salkeld, A. D., & Bro.
Skerry, A. T., & Co.
Solis, Andrew J., Jr. & Co.
Speed & Stephenson.

**Woolen Yarns.**
Adams, Joseph M., Co.
Moeller & Littauer.

**Worsted Yarns.**
Alleghany Worsted Mills.
Boyer, B. F., Co.
Campion, Richard.
Cranston Worsted Mills.
Harding, Whitman & Co.
Harper, E. G.
Moeller & Littauer.
Pocasset Worsted Co.
Queensbury Mills.
Salkeld, A. D., & Bro.
Skerry, A. T., & Co.
Speed & Stephenson.


**Stoddard**

We import a most complete and extensive line of **Cotton, Silk, Worsted, Woolen and Fibre Machinery, Mill Supplies, Egyptian Cotton and Burlaps.** Representing the

**Haserick**

leading foreign manufacturers and dealers and keep thoroughly up with the latest inprovements in Textile Machines. We should be pleased to com-

**Richards**

municate with parties contemplating any additions or changes in mill equipments and to send circulars describing at length, our machines and supplies.

**& Co.**

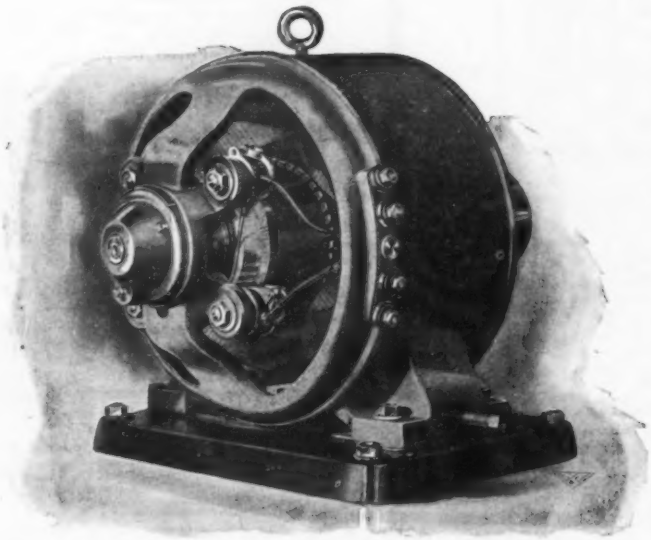
152-8 CONGRESS STREET, BOSTON
8 CURRER STREET, BRADFORD, ENG.
PHILADELPHIA OFFICE, BOURSE BLDG.
EAST FOURTH STREET, CHARLOTTE, N. C.

**GEISENHEIMER & CO.**
189 Front Street, NEW YORK.
**K. OEHLER'S**
Branch Offices:
19 Pearl Street, Boston, Mass.
31 So. Front Street, Phila., Pa.

**Aniline Salt and Oil.**
**Aniline Colors.**
DYESTUFFS,
DYEWOOD EXTRACTS.

# Bullock Type "B" Motor

## For Textile Mills



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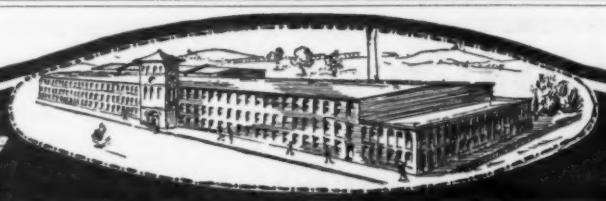

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| One | " | " | 11″ | " |
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| One | " | " | 13″ | " |
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No. 8 Sturtevant blower, with 5 manifold heater, hot air drum, 6 dry pipes and 6 iron frame take ups.

One 30" cloth turning machine.

One McGuinnis Little Hustler fleecing machine (to brush in the roll.) One body brusher 4' 8" long.

Two Huse rib machines, 18" gauge, in good condition.

Further particulars on application.

NORFOLK YARN MILLS, Norfolk, Va.

## An Opportunity of a Lifetime.

to actual or prospective mill owners who are large employers of female labor. Leetsdale, Penna. is 16 miles from Pittsburgh (situated on the Ohio River) and the Penna. R. R. lines also connects to the N.Y.C. system. Adjoining Leetsdale is the great American Bridge Works at Ambridge on one side and on the other is The Riter-Conley Mfg. Co.'s large new plant. Every advantage as to prices, schools, residences, churches, water, natural gas, clean locality. Correspondence solicited. T. L. SHIELDS,
Leetsdale, Pa.

## BACK NUMBERS WANTED.

We should like to purchase a dozen or more copies of **OCTOBER, 1904**, issue of Textile World Record, to supply several urgent demands, and will pay 25 cents each upon receipt. **Mark plainly, so that we may know to whom to send remittance**, or give credit on subscription account as may be desired.

A few copies of **JUNE, 1904** issue are also wanted.

LORD & NAGLE CO., 299 Devonshire St., Boston.

**For Sale.** Six Hand Jacquard and Noppen Knitting Machines with all the belongings. The machines are 32 inches, 5 needles to an inch, and are in the best condition. The seller will furnish an experienced knitter to set them up, and teach how to run them if necessary. All kinds of fancy work can be made on them. Address Noppen, Textile World Record, Boston, Mass.

**For Sale.** 1 Sargent 36 inch Burr Picker, $125; 15 Crompton 92 inch looms, 24 harness 4 by 4 box, at $90 each; 1 Miller 75 inch Flexible Bed Cloth Press,, $400. American Textile Machinery Co. American Trust Bldg., Cleveland, Ohio.

**For Sale.** Rain proofing plant for treating cloth so that it will be impervious to rain. Full particulars to principals only. Address Plant, P. O. Box 1592, Philadelphia, Pa.

## MEN WANTED.

Same rates as Wants, For Sale, etc. Manufacturers will be furnished, without charge, with the names of suitable men who are entered on our list, and can usually supply their wants in this way.

**Wanted. Manager of a Hosiery Mill,** located in Canada, capacity 300 dozen per week. Must understand machinery and be fully qualified to manufacture woolen goods. Name salary wanted and state references. Address "Canada," Textile World Record, Boston, Mass.

**Wanted.** Superintendent, Pontiac Knitting Company, Pontiac, Mich.

**A Good Position** is always open to a competent man. His difficulty is to find it. We have openings and receive daily calls for Secretaries and Treasurers of business houses, Superintendents, Managers, Engineers, Expert Bookkeepers, Traveling Salesmen; Executive, Clerical and Technical positions of all kinds, paying from $1,000 to $10,000 a year. Write for plan and booklet. Hapgoods (Inc.), Suite 511, 309 Broadway, New York.

## SITUATIONS WANTED.

### FIRST-CLASS DYER,

Twelve years in present position, is open to change. Well up in fancy worsted, wool and cotton, both loose and in the yarn; fast colors. State salary prepared to pay. Address, "EXPERT," care Textile World Record, Boston.

**Position Wanted.** By a thoroughly experienced bleacher and dyer of cotton, cotton and wool mixtures, mercerized and wool, all fibres bleached successfully with Peroxide of Sodium process, A1 reference, married, terms moderate, will not go West or to Canada. Address "Bleacher," Textile World Record, Boston.

**Wanted.** Position as cotton carder. Eighteen years' experience. At present employed. Good references. Address Carder, Textile World Record, Boston, Mass.

**Assistant Designer** is open for engagement, accustomed to all kinds of men's wear, woolens and worsteds. Address F. D. T., corner Lincoln and Grotto Ave., Providence, R. I.

### Situation Wanted—Boss Knitter.

**Boss Knitter** on all kinds of flat latch knitting machines, foreign or domestic, and also fixer of same. Competent to take charge in the manufacture of sweaters, blouses, cardigan jackets, skirts, tam o' shanters and German hand knit hosiery of all kinds including gloves. Wants position at once. Address "H.B.D.," care Textile World Record," 123 Liberty St., N. Y.

**Knitting Machinist or Foreman.** Young man, 26, single, with experience as repairer and fixer, on all kinds of knitting and sewing machines in a large mill, wishes position as assistant foreman, or to take full charge, with chance of advancement. Open for engagement about January 15th. Address "Industrial," Textile World Record, Boston, Mass.

**Boss Dyer (Saxon),** with twelve years' experience in Germany and ten years in the United States in the art of bleaching and dyeing of fast black and colors on hosiery, all kinds of knit goods (garment or piece) and skein yarns, desires to change present position. Gilt-edge references. Address "Ungreenable," Textile World Record, Boston, Mass.

# SITUATIONS WANTED.

The following advertisements are a portion of those of superintendents and overseers of whom full particulars are on file at this office. Manufacturers who may be in need of such men may address them in care of Textile World Record, or state their requirements directly, and the addresses of suitable men will be furnished without charge.

Any paid-in-advance subscriber may have his name placed on the list of those desiring positions, upon filling out the requisite blanks, furnished upon request. Correspondence is confidential.

## COTTON SUPERINTENDENTS.

**Superintendent Cotton Mill** open to a position. Age 33; American; married. Good experience as overseer of carding in large mills. Combed and carded hosiery yarns, shirtings, sheetings, cheviots, madras. First-class references. 2096, Textile World Record.

**Superintendent** of broad silk mill wants position. Age 39; English; married. Worked on mostly plain goods. Could be of good service to some reliable concern just starting up. Has small plant of his own which he would put in as stock with a first-class concern. 3154, Textile World Record.

**Superintendent.** Would like position in South. Not particular about salary to start. Machinist and thoroughly acquainted with all kinds of card room machinery, also spinning frames. Taken superintendent course in textile school and has had 23 years of practical experience in the mill, mostly on fine yarn work. 3044, Textile World Record.

**Cotton Mill Superintendent.** Age 28; Scotch; married. All counts of American and Egyptian cotton from 10 to 60, twist and weft, warps, beams, and bundles and crape yarns, super quality. Familiar with Platt, Asa Lee, Howard & Bullough, Hetherington and Brooks & Doxey machinery. First-class references. 3042, Textile World Record.

**Overseer of Cotton Carding.** Age 32; married. Carded and combed yarn, fine and coarse, lenos. lawns, shirtings. English and American makes of machinery. References. 3025, Textile World Record.

**Cotton Mill Superintendent,** or assistant. Age 34; married. Worked on cotton machinery on coarse and medium numbers. Textile school education in designing, carding and spinning. 3003, Textile World Record.

**Assistant Superintendent** or boss weaver of cotton mill. Twenty-five years' experience. Unquestionable references as to character and ability. Thoroughly acquainted with plain, fancy box or lappet looms. Can take place on short notice. 3034, Textile World Record.

**Superintendent of Cotton Yarn Mill** or duck mill. A young man; American; married. Prefers position in the South. Worked in different departments, spinning, spooling, twisting, warping, reeling and balling and now ready for a superintendent's place. Unquestionable references. 3087, Textile World Record.

**Superintendency** of cotton mill wanted by a thoroughly practical cotton manufacturer of over 20 years' experience. Age 38; married. Temperate. Good manager. Fully competent to obtain full production at minimum cost and maintain best selling qualities. Highest references given. 1236, Textile World Record.

**Superintendent.** All kinds of fancy cotton, white and colored, plain and fancy, jacquard and box work. also silks and worsteds. Would take good overseer of weaving position. 3120, Textile World Record.

**Superintendent** or assistant. Leno, plain and fancy ginghams and sheetings. Wants place at once. 3162, Textile World Record.

**Overseer** or superintendent. American. Married. Ginghams, madras, cheviots, dress goods. Good experience and first-class character. 3164 Textile World Record.

## WOOLEN SUPERINTENDENTS.

**Superintendent** of small woolen mill. Piece dyed goods, thibets, Venetians, meltons, etc. 3114, Textile World Record.

**Superintendent.** Has made yarn and shoddies and about everything in woolen line. Good general knowledge of woolen manufacture. Familiar with English, Belgium and American carding, spinning and preparatory machinery. 3088, Textile World Record.

**Superintendent** or assistant superintendent wants position. Age 31; American; married. Good experience on all kinds of goods, especially on union and satinets. Good references. Six years' experience in present place, five as overseer and one as superintendent. 3139, Textile World Record.

**Superintendent or Designer.** Age 37. English. Married. Experienced in this country and England. Worked on cloakings, suitings, coverts, broadcloths, etc. Mill closed, and wants place at once. Good references. 3140, Textile World Record.

**Superintendent,** manager or designer. Age 37; English; married. Worsted and woolen goods for men's wear and rain cloths. Worked in English mills, and has also been employed in this country. 3103, Textile World Record.

**Superintendent,** age 34; American; married. Worked on fancy woolens. Not employed, and can take position at once. Will not go to Canada or West or South. Would take a good boss spinner place or assistant superintendent, but wants over $4.00 per day. 3104, Textile World Record.

**Superintendent** or designer of small or medium sized mill. All kinds of fancy worsteds, cassimeres, cheviots, overcoatings and dress goods. Age 31; married; Scotch. 3076. Textile World Record.

**Superintendent** or boss weaver. 15 years' experience in worsted, woolen and silk goods. Graduate of Philadelphia Textile School. 32 years old; married. Good manager of help. American. 3119, Textile World Record.

**Superintendent.** Age 37; American; married. Woolen dress goods, fancy cassimeres, cloakings, etc. Will not go West, South or to Canada. First-class references. Graduate of Philadelphia Textile School, and also had good practical experience. 3126, Textile World Record.

**Superintendent** and designer, or assistant superintendent. Age 34; married. Worked on cloths ranging from all cotton to all wool and worsteds, such as cotton worsteds, jeans, army cloths, kerseys, etc. Excellent references. 3148, Textile World Record.

**Superintendent and Designer.** Age 30; American; married. Cotton warp, worsted and silk vestings, tapestry curtains, plaid backs, broadcloth, etc. 3146. Textile World Record.

**Superintendent.** Age 37; American; married. Woolen dress goods, fancy cassimeres, cloakings, etc. First-class references. Graduate of Philadelphia Textile School, and also 18 years' practical experience. 3126, Textile World Record.

**Superintendent.** American; married. Worked on cassimeres, dress goods, cotton warps, and has had some experience on worsteds. Will go anywhere, but would like a good Western mill. Good experience. 3034. Textile World Record.

**Superintendent or Designer.** Age 37; American; married. All grades of woolens and also cotton warp goods. Will not go South or to Canada. 3124. Textile World Record.

## COTTON CARDERS.

**Carder in Cotton Mill.** Coarse or fine, white or colored, hosiery, Egyptian, etc. Age 35; Canadian; married. 3029, Textile World Record.

**Overseer of Carding.** Large experience on all kinds of work and both English and American systems. Can furnish first-class references. Had charge of carding in some of the best New England mills. 3009, Textile World Record.

**Overseer of Carding** or cotton ring spinning. Worked on carded and combed Peelers, Egyptian, and Sea Island cottons, making yarns from 8 to 80. 3015, Textile World Record.

**Overseer of Carding.** Has held all positions in picker and card rooms. White and colored goods, 8s to 40s. 3070, Textile World Record.

**Overseer of Carding Mill.** All kinds of fine yarns. Started up two of the largest card rooms in New England. Considered an expert in the manufacture of combed yarns from the bale to the finished article. First-class recommendations. 1745, Textile World Record.

**Overseer of Cotton Carding.** Worked on all classes of cotton, carded and combed, in counts to 135s. Will not go West or South. 3061, Textile World Record.

**Overseer of Carding or Ring Spinning.** Age 35; American. Sheetings, prin s and yarns, coarse and fine. Worked on most American machinery, but is more familiar with Lowell & Whitin. 1915, Textile World Record.

**Overseer of Carding** or Superintendent. Wide experience in large mills. Age 42; married. Finest of references. Will take large carding or superintendency. Familiar with all counts. 3133, Textile World Record.

**Overseer** or secondhand in preparatory department of long chain beaming, quilling, tape dressing, warping and spooling. A Scotchman; married. Will not go West or South. 3156, Textile World Record.

## WOOLEN CARDERS.

**Overseer for Washing,** Carding or Combing wool for worsted wants to better himself. Speaks German, French and English. Best of references. 2093, Textile World Record.

**Carder,** or carder and spinner. German; married. Worked on all wool, wool and cotton, and shoddy mixes. Ten years' actual experience, and can furnish first-class recommendations. 2057, Textile World Record.

**Overseer of Woolen Carding.** Worked on all wool, wool and shoddy, wool, shoddy and noils. Wants $4 a day. Familiar with Davis & Furber, Furbush, Lombard and Bollette and Brown Patent. 3071, Textile World Record.

**Overseer of Combing,** washing, carding. Age 36, English, married. All classes of wool. Good experience and first-class recommendation. 3094, Textile World Record.

**Overseer of Woolen Carding.** Would accept secondhand position. All wool, cotton and wool, shoddies, mixes, worsteds. Does not wish for position on shoddy, but would consider one. Blankets, suitings, flannels. Understands spinning. 3093. Textile World Record.

**Carder and Spinner.** Been overseer 32 years, making every variety of cassimere, flannels, overcoatings, cloakings, dress goods, etc. Married; American. 3132, Textile World Record.

**Overseer of Carding.** Age 30; American married; Nearly all classes of goods. Good experience and references. Address 3170, Textile World Record, Boston.

**Boss Carder.** Aged 28. Worked on plain goods. Will go South or anywhere. Steady man, and excellent references. Also a frame spinner. 1759, Textile World Record.

## COTTON SPINNERS.

**Overseer of Mule Spinning** who has had a wide experience in large New England mills on yar ranging from 24's to 160's is open to a position. .. years old; American. Good references. 2003, Textile World Record.

**Overseer Ring Spinning,** or asst. superintendent. Sea Island combed from 6s to 30s, American from 6s to 50s; in fact, all grades of cotton, also expert on cable yarn. Prefers South, but will go anywhere. Wants $3.50 per day to begin with. 2020, Textile World Record.

**Boss Ring or Mule Spinner.** Age 43; English; married. Asa Lee mules, Lowell Machine Shop, Platt, Mason mules; Howard & Bullough, Lowell and Mason frames. Yarns from 5's to 90's. 3001, Textile World Record.

**Overseer of Cotton Mule Spinning.** Understands Mason and English makes of mules. Has worked in mule room sixteen years, five years as second hand and a year and a half as overseer. 28 years old; married; steady and temperate. Would like to get work in N. E. or New York states. Has worked on colored hosiery yarn and filling. 1822, Textile World Record.

**Overseer of Ring Spinning.** Aged 42; American; married. Ginghams, sheetings, awnings, denims, etc.; $3 to $4 per day. 3018, Textile World Record.

**Overseer Ring Spinning,** spooling and warping wishes a position. A married man, with good experience. Worked on sheetings, shirtings, jeans, grain bags. 3152, Textile World Record.

**Supt. of Cotton Mill,** or overseer of mule or ring spinning is open to a position; 16 years' experience in Northern mills, on yarns, denims, awnings, apron checks, bicycle suitings, shirtings, etc., etc. Familiar with all well-known makes of cotton machinery; 29 years old; American; married. Can give references from large Massachusetts mills. 1527, Textile World Record.

**Overseer of Cone Winding** and spooling or ring spinning, who understands Universal, Foster, Broadbent and Payne winders, and Whitin and Mason frames, desires a position. Has worked on carded and combed yarns from 4's to 160's; also, mercerized, gassed and bleached yarns from 2 to 8 ply. Young man; American; married, and can give satisfactory references from large mills. 1960, Textile World Record.

**Overseer of Spooling,** warping, beaming, slashing and web drawing. Age 37; married. 3010, Textile World Record.

**Overseer of Spinning.** Age 34; married. Good experience. 20s to 90s Egyptian and American cotton. 3125, Textile World Record.

## WOOLEN SPINNERS.

**Roll Coverer** wants an opening for work. Can cover cotton or worsted rolls, make aprons, or better, has had large experience. Can furnish tools. Work by piece or day. 1803, Textile World Record.

**Superintendent** woolen mill. Age 47; English; married. Wants New England or Middle States. 10 years' experience in first-class N. E. mills. 2028, Textile World Record.

**Overseer of Warping, Spooling and Winding.** Dress goods and cloth. Will not go to Canada. Aged 40; married. Good experience. References. 3027, Textile World Record.

**Woolen Finisher.** First-class. Familiar with all classes of goods and machinery. Can take full charge from loom to case. Has always been very successful. 1244, Textile World Record.

**Boss Spinner.** Age 34; Scotch. Worked on all wool, cotton and wool and shoddy mixes. Will not go West, South or to Canada. References. Good experience. 3032, Textile World Record.

## COTTON WEAVERS.

**Overseer of Weaving** or designer. Lawns, sheetings, twills, sateens, quilts, bedford cords, lappets. A young man; unmarried. Good experience and first-class recomendation. 3063, Textile World Record.

**Overseer of Weaving.** Englishman; 33 years of age; married. Worked on fine lawns, sheetings, sateens and fancies, coarse drills, twills, bicycle cloth, automobile cloth for tires. Familiar with Whitin, Crompton, Knowles, Mason, Kilburn & Lincoln and Lowell machines. 3073, Textile World Record.

**Overseer Cotton Weaving.** Plain and a variety of fancies, lenos, etc. Good experience. A young man; English; married. 3147, Textile World Record.

**Overseer** of plain cotton weaving. Age 27; American; married. Familiar with Whitin, Mason, Colvin and Draper looms. Worked on prints, sheetings, cambrics, lawns, twills, etc. 3143, Textile World Record.

**Overseer of Weaving.** Sheetings, sateens, ginghams, and dimities. Will not go South. 3116, Textile World Record.

**Overseer of Weaving.** Worked on sheetings, twills, sateens and fancies. Wants not less than $18 per week. 3157, Textile World Record.

**Practical Boss Weaver** and loom fixer wants position. Good and long experience. Good record for big production; good quality and for being a good manager of help, and the getting and keeping plenty of good hands. A sober and steady man. Will go anywhere. Either cotton, woolen or jute. 1806, Textile World Record.

## WOOLEN WEAVERS.

**Overseer of Weaving,** also designer. Men's wear, woolen and worsted, and fancies of all kinds, cotton worsteds, dress goods. Knowles and Crompton looms. Age 35. 3056, Textile World Record.

**Overseer of Weaving,** or would take good second hand job. Age 42; married. Worked on dress goods, suitings, plaid backs, cloakings, meltons and other classes of goods. Worked on Crompton & Knowles loom. 3016, Textile World Record.

**Boss Weaver** or assistant superintendent. Worked on all kinds of worsteds and woolens. Crompton & Knowles looms. Wants place at once. Middle aged; English; married. Good experience. Excellent references. 3062, Textile World Record.

**Boss Weaver.** Aged 38; married. Cassimeres, beavers, kerseys, dress goods, flannels, blankets. Worked on Crompton & Knowles broad looms. Good recommendation. 3066, Textile World Record.

**Overseer of Woolen Weaving,** or would take a secondhand job. 35 years old; married. Familiar with Crompton & Knowles looms. Good references. 3089, Textile World Record.

**Overseer of Weaving** or designer. Age 29; American; married. Thibets, meltons, kerseys, worsteds and cotton worsteds. Crompton & Knowles looms. Good experience. First class recommendation. 2051, Textile World Record.

**Boss Weaver** wants position. Very wide experience. White and colored, plain and fancy. Understands all kinds of looms. 335, Textile World Record.

**Overseer of Weaving.** Worked on all kinds of fancy dress goods, cotton, worsted and woolen, also men's wear. Age 31; English; unmarried. 3159, Textile World Record.

**Overseer of Weave Room,** designer or assistant superintendent. Wide experience. Cassimeres, dress goods, blankets, flannels, etc. All patterns of Knowles & Crompton looms, Davis & Furber, spooling, dressing and weaving machinery, Worcester warp compressor. 1838, Textile World Record.

## DYERS.

**Secondhand Dyer.** Cotton piece and cotton interwoven with paper. Experience with all classes of goods on a small scale. Aged 23; German descent; unmarried. Address 3171, Textile World Record, Boston.

**Boss Dyer.** Scotch; married. Good references. Bleaching, scouring, dyeing and carbonizing in roll or the garment. Raw stock, cotton or wool. Has worked on ginghams, elderdowns, knit goods. Will not go South or to Canada. 3149, Textile World Record.

**Dyer** or superintendent of dyeing and finishing. Age 34; English; married. Not less than $3.50 per day. All classes of woolen, worsted, mixed and cotton piece goods, bleaching, mercerizing. Can take charge from loom to case. 3121, Textile World Record.

**Boss Dyer.** A young man; married; American. Worked on wool, shoddy, cotton, silk noils, rags, camel's hair and piece dyes on satinets. Will accept $2 per day to start. 3122, Textile World Record.

**Superintendent** of cotton bleachery is open to a position. Excellent experience. American; married; aged 37. Familiar with cambrics, sheetings, shirtings, lawns, sateens, drilling and fancy weaves. 3153, Textile World Record.

**Fancy Dyer.** Aged 37; American; married. Cotton, wool and silk. 3158, Textile World Record.

**Overseer of Dyeing.** Men's wear and dress goods, loose wool, piece dyes and yarns. Good experience. 3161, Textile World Record.

**Dyer.** Worked on piece dyes, wool, cotton, shoddy yarns, rags and union dyes and carbonizing. Wants place at once. Good experience and references. 3092, Textile World Record.

**Wanted,** position as boss dyer and bleacher of cotton yarns, long and short chain and skein yarn. Good references. 3145, Textile World Record.

## FINISHERS.

**Finisher** and assistant superintendent wants position. Age 31; American; married. Good experience on all kinds of goods, especially on unions and satinets. Good references. Will not go West, South or to Canada. 3139, Textile World Record.

**Boss Finisher.** 25 years' experience on all classes of goods, woolen and worsted and cotton mixtures of all grades. 3142, Textile World Record.

**Boss Finisher.** American. Cheviots, cassimeres, beavers, dress goods, etc. Wants $2.50 to $3 per day. 3123, Textile World Record.

**Overseer of Finishing.** Age 32; American; married. All grades of worsted and woolens. Good experience. Address 3167, Textile World Record, Boston.

**Overseer of Finishing Room.** Cut and full fashioned balbriggan ribbed goods. Familiar with Union Special, Wheeler & Wilson, Willcox & Gibbs, Merrow, etc. Excellent references. Address 3168, Textile World Record, Boston.

**Woolen Finisher.** Age 35; American; married; Wants $2.50 or $3.00 per day. Good experience. 3138, Textile World Record.

**Overseer of Cloth Room.** Age 37; American; married. Wants $18 per week or over. 3110, Textile World Record.

**Overseer of Finishing.** Age 33; American; married. Meltons, coverts, cheviots, flannels, mohairs, etc. Wants position in New England, preferably Rhode Island. 3129, Textile World Record, Boston.

**Foreman** of cotton finishing room. Eight years' practical experience on napping machines, starching and calendering. Worked in mills in Italy and America. Married. 3155, Textile World Record.

## KNITTERS.

**Knitting Fixer.** A young man; American. Ribbed and seamless hosiery, cotton, lisle and Egyptian yarns. Familiar with McMichael & Wildman ribbers, Paxton & O'Neill and Branson 3/4 automatic and Hepworth loopers. Will not go South. 3130, Textile World Record.

**Boss knitter,** sewing machine fixer. Age 28; American. All classes of ladies' and children's knit underwear made on circular latch needle machines. Wants place at once. 3102, Textile World Record.

**General Manager** or superintendent of ribbed underwear mill. American; married. Been in underwear business eleven years as superintendent and manager. First-class references as to character and ability. 3100, Textile World Record.

**Latch Needle Knitter** on N. & T., S. & H., S. & W., McM. & W., Pepper, Lewis Jones, etc., circular machines. Twelve years' experience as boss knitter and superintendent. Wants steady work. Sober, good manager of help, best of references. 3106, Textile World Record.

**Boss Knitter** or fixer. Would like to work with boss finisher on sewing machines. American; age 32. Familiar with McMichael & Wildman, Nye & Tredick, Snyder & Fisher, Scott & Williams and other makes of latch needle machines, Tompkins spring needle machines, and understands winding. 3118, Textile World Record.

**Position wanted** in charge of boarding, pressing, pairing, folding of hosiery, etc. First-class references. 3105, Textile World Record.

**Knitter.** Worked on light and heavy weight ladies' ribbed vests and shaped vests, and all kinds of common knit goods. Familiar with Champion, Nye & Tredick, Star, McMichael & Wildman machines. Wants work in Pennsylvania. 3037, Textile World Record.

## DESIGNERS.

**Designer** or superintendent. Age 37; English; married. Experienced in this country and England. Worked on cloakings, suitings, coverts, broadcloths, etc. Wants $30 to $40 per week. Mill closed, and wants place at once. Good references. 3140, Textile World Record.

**Designer.** A young man who has had eight years of practical experience in cotton designing wants position as designer or boss weaver. Worked on Marseilles, crochet and satin bed spreads, table covers, ginghams of all kinds, including leno, lappet and all classes of the above. Jacquard work a specialty. 3107, Textile World Record.

**Assistant Designer** or assistant superintendent. Young man; American. Men's wear, ladies' dress goods, shirtings, silk brocades, etc. Graduate of Philadelphia Textile School, and also has had short experience in mill. 3160, Textile World Record.

**Designer** or assistant. Worked on woolen and worsteds, cotton worsteds and mercerized goods. Good experience. A young man, single, Swede. 3127, Textile World Record.

**Designer** or superintendent. A German, 26 years of age. Dress goods and men's wear. Experienced in Germany and this country. 3163, Textile World Record.

**Assistant Designer** or assistant superintendent of woolen or worsted mill. A young man; American; unmarried. Men's wear, dress goods, silk brocades, damask, etc. 3160, Textile World Record.

**Designer,** assistant designer or assistant superintendent. German. Woolen and worsted men's wear and ladies' dress goods. Experienced in Germany and a short time in this country. 3166, Textile World Record.

**Designer** or superintendent. Ginghams, crepe, jacquards, cycle tires, filter cloths, vesting cloth, etc. Good recommendations. Middle aged man; English; married. Address 3169, Textile World Record, Boston.

## MISCELLANEOUS.

**Asst. Superintendent** of dyeing, printing and finishing plant. Experienced in cotton and silk and capable of turning out finished product. American; 27 and married. Best of references. 3136, Textile World Record.

**Second Boss** or in advisory capacity for jacquard weaving. Familiar with almost every line of silk fabrics, also cotton backs, tapestry and upholstery goods, hammocks, table and bed covers, ribbons, etc. 3135, Textile World Record.

**Loom Boss** or asst. superintendent. All kinds of worsted goods for ladies' and gentlemen's wear and various classes of cotton goods. Worked in English mills and also in this country. 3151, Textile World Record.

**Loom Boss.** Age 32; American; married. Also a designer. Knowles, Crompton, Jacquard and dobby looms. Wants $3 per day. 3150, Textile World Record.

**Machinist.** French; married. Has had full charge of all kinds of repairing. Understands all about boilers, engines, motors and can give best of references. 3090, Textile World Record.

**Overseer** or second hand's position. Understands twisting, warping, spooling and cone winding. Worked on all kinds of cotton yarns. Will not go West or South. 3112, Textile World Record.

**Master Mechanic** in cotton mill. Wants $1,500 to $2,500 per year, according to duties and position. Can take place at once. Will not go to Western States or Canada. Familiar with steam engines, pumps, boilers, water wheels and complete cotton mill equipment. 3039, Textile World Record.

**Overseer** of dressing. American. Married. Wool, worsted and cotton worsteds. 3165, Textile World Record.

**Master Mechanic** wishes position in the North. 35 years old; married. Worked 15 years on repairs. Wants $3.50 per day. Has license for running engines and boilers. Understands all kinds of water wheels and care of same, dynamos and electric lights and also gas houses, and a good knowledge of building, all kinds of wood work and piping and blacksmithing. Understands cotton mill repairs as good as the best man at such work. 2025, Textile World Record.

**An Expert** on soap making and wool scouring will be open to a position shortly. Is familiar with the treatment of all grades. About 40 years old; English; married. Has worked for one concern in the United States for 12 years. 1980, Textile World Record.

**Paymaster or Bookkeeper. Agent or Manager** wood or iron working plant or small cotton mill. 28 years' experience. Expert accountant. Can take charge of all the office work in large factory or do all myself in small factory. Good references. Will go anywhere in New England or Middle States. 1881, Textile World Record.

**A Second-class Engineer,** 48 years of age, American, would like a position as such in a N. E. mill. Is steady and reliable. Good references from former employers. 1965, Textile World Record.

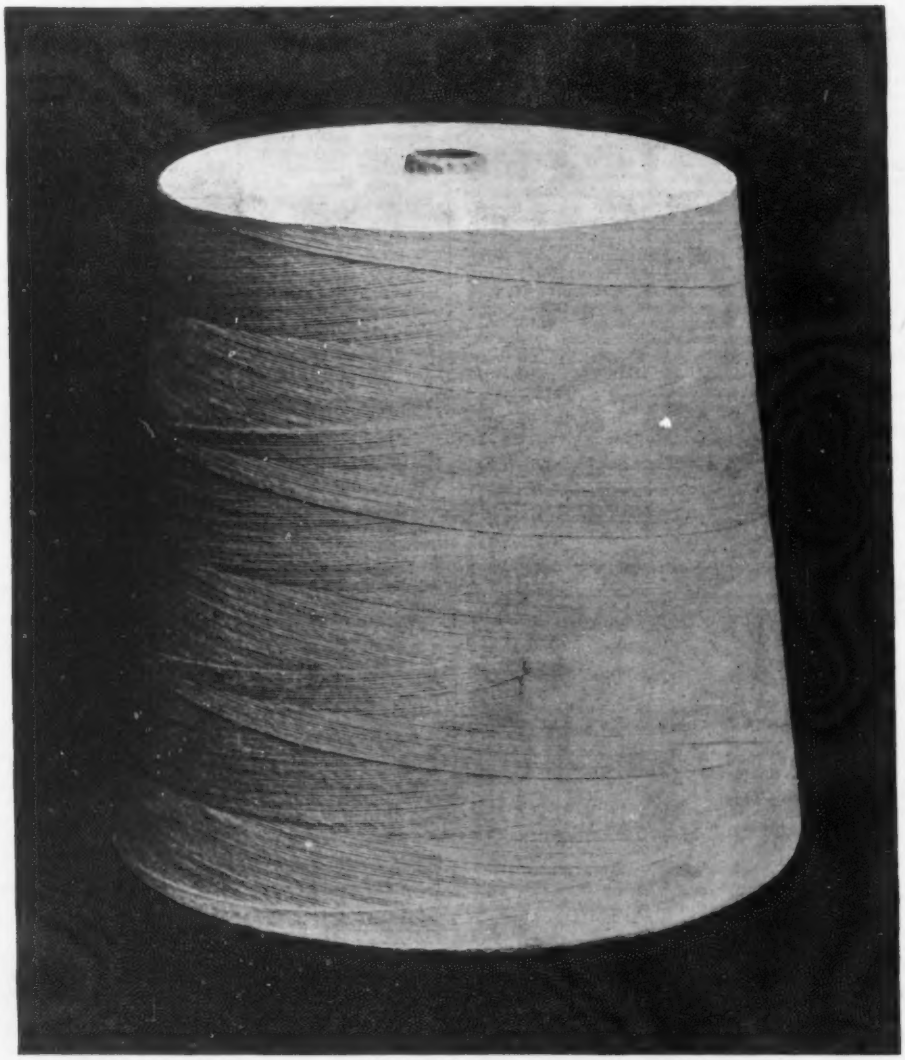
**Foreman of Repair Shop.** Age 30; American; married. Several years' experience in cotton mill repair work. Is familiar with almost any kind of machinery as far as repairs go.—Lowell Machine Shop, Hetherington, Kitson, Providence, Biddeford, etc. 2023, Textile World Record.

**Salesman** for hosiery an underwear. Age 37, single. Can furnish references. 3060, Textile World Record.

**Master Mechanic,** or mechanical superintendent. Many years' experience in general machine work and mill engineering. References. 3067, Textile World Record.

# The Correct Cone

**From Photograph of Cone of Hosiery Yarn Wound by No. 50 Machine.**



**A soft package wound with practically no tension or pressure. The yarn laid with absolute precision: each layer from core to surface, having exactly the same spacing between strands, even delivery throughout is assured.**

It is on record that yarns spun from the same stock, on the same frames, when wound into cones by the Universal machines have averaged by actual test extending over many months, over 20 per cent. stronger than when coned by the best system of drum winding machinery now in use.

## Universal Winding Company

**95 South Street, Boston.**

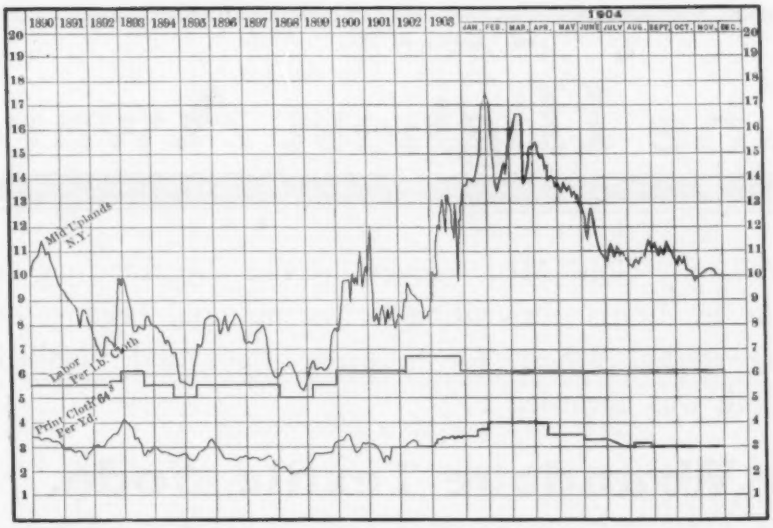

1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903
1904
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
Mill Uplands N.Y.
Labor Per Lb. Cloth
Print Cloth 64 Per Yd.

CHART SHOWING RANGE IN THE PRICE OF COTTON TO DATE.

## The Cotton Market.

The cotton market during the month has suffered a marked decline, the greater part of which took place just previous to the appearance of the government report, which indicates a crop of 12,162,000 bales. Following the conviction of the trade that the supply of cotton this year would reach these high figures, the price of middling uplands for spot cotton dropped to 8½ cents. This decline is not indicated on the chart. This drop was followed by a reaction, and at the present writing middling uplands is selling for 8 cents.

The estimate has unquestionably affected current prices, but it is only the actual weight of cotton that will control affairs in the long run. Nevertheless, many manufacturers are confronted with a serious problem by reason of the shrinkage in the price of raw material, and those who have their mills stocked with 10 cent cotton will be compelled to take a loss providing the raw material remains at its present level.

The movement into sight from September 1 to November 25, as estimated by the Chronicle, corresponds with the high government estimate, being larger than for any of the five preceding years, as shown by the following table:

| | |
|---|---|
| 1899, | 4,507,697 bales. |
| 1900, | 4,815,708 " |
| 1901, | 4,690,396 " |
| 1902, | 4,956,443 " |
| 1903, | 4,840,715 " |
| 1904, | 5,635,045 " |

While the present developments in the cotton market are distinctly bearish there is danger of too great a concession to sentiment. For two or three years a large proportion of the cotton spindles throughout the world have been idle for a great part of the time, owing to lack of cotton. Warehouses are empty and there is every reason to believe that the invisible stock of cotton throughout the world is far below the normal quantity. The visible supply is estimated by the Chronicle on November 26, at 3,911,765 bales, as compared with 3,389,589 bales in 1903; 3,263,077 bales in 1902, and 3,470,534 bales in 1901.

*Texas, Chico. The new mill project being agitated at this place will be known as the Farmers' Co-operative Union Cotton Mills, with E. C. Stockton, president of the concern. The plant is to be located in Wise or some nearby county. Subscriptions to the capital stock are being solicited and it is thought nothing will be done definitely before next summer.

C. M. BLAISDELL, Pres. and Treas. G. A. BLAISDELL, Vice Pres. and Secy.
Established 1860—Incorporated 1893.
THE S. BLAISDELL, JR., CO.,
COTTON, EGYPTIAN PERUVIAN
American Long Staple a Specialty. Shipments direct to mill from Egypt, Peru and all American Southern Points.
CHICOPEE, MASS.
Cotton Waste Purchased on Yearly Contract from Mills.

WEIMAR BROS. MANUFACTURERS OF Cotton Mercerized Tapes,
SPOOL TAPES, BINDINGS AND NARROW FABRICS FOR UNDERWEAR AND OTHER TRADES.
Phone Connections. Works, 2046-48 Amber Street. PHILADELPHIA, PA.

# The Highest Award

and only Gold Medal given by the superior jury at the St. Louis Exposition to any material because of its special fitness for scouring wool and finished cloth was awarded to

## Wyandotte Textile Soda.

The award being confirmed by the United States government and made by a committee of unbiased, expert and honest judges of International character comes to Wyandotte Textile Soda as a just tribute to its excellent qualities.

This decision removes all doubt as to the superiority of Wyandotte Textile Soda and furnishes the best of reasons why every scourer of wool and finished cloth should avail themselves of the great assistance this product will give them.

Ask your supply man for Wyandotte Textile Soda.

None genuine except with a card bearing this Trade Mark

In Every Package.

**The J. B. FORD CO.,**

**Sole Manufacturers,**

**WYANDOTTE - - MICH.**

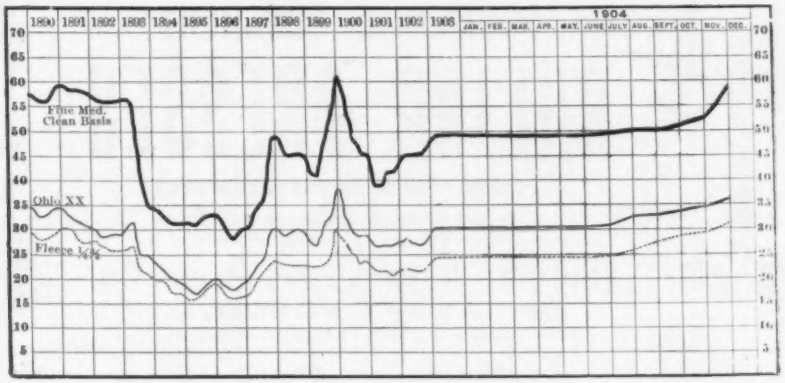



CHART SHOWING RANGES IN THE PRICE OF WOOL TO DATE.

## Wool Market.

The wool market has advanced steadily and at this writing prices are higher than at any time during the last fifteen years, with the exception of a brief period in 1899, when the boom of that year culminated with fine medium territory selling at 60 to 65 cents. The volume of business is somewhat restricted owing largely to the low stocks on hand. The large manufacturers covered their requirements for the season some time ago, and now the business consists in the purchases by the smaller mills at top prices. This will place the small sized mills at a disadvantage in competition with their large competitors, and will doubtless stimulate efforts to reduce the cost of goods by the use of shoddy and cotton.

Quarter bloods have reached the nominal importing point and if the present upward movement continues there is likely to be an increased quantity and variety of foreign wool brought into the country. The trade in territory wool is active and contracts have recently been made for the importation of several very large lots. A feature of the situation is the increased use of carpet wools for clothing purposes. Manufacturers are mixing these low grade wools, particularly East Indias, with the domestic wool in order to offset the advance in price.

New York, Little Falls. The Gilbert Knitting Company is to instal generators in the Astoronga Mill, utilizing their valuable water power to generate electricity, which is to be used as operating power.

Wool and Woolen Goods Made **NONSHRINKABLE** by the use of "Nevershrink Process."
May be applied at any stage of manufacturing. Write for Booklet.
**CHARLES H. HEYER,**
1501 Real Estate Trust Building. PHILADELPHIA, PA.

**STANDARD QUALITY COMBED RAMIE TOPS and NOILS a Specialty. RAMIE YARNS in All Numbers for All Purposes**

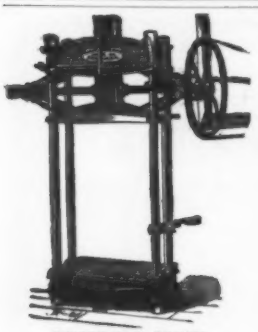
# FRANK A. TIERNEY,

# WOOL, TOPS, NOILS, YARNS,

Wool, Mohair, Camel Hair, Silk, and Ramie Tops and Noils. Woolen, Worsted, Mohair, Ramie, and Silk Knitting Yarns. All kinds of Yarn for Weaving Purposes.

*Special Fibres and Novelties for Woolen, Cotton and Silk Manufacturers.*

**Room 203, Wool Exchange Building, 260 West Broadway, New York.**



KNUCKLE JOINT.

BOOMER & BOSCHERT

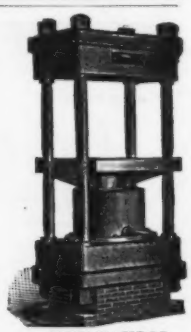
# BALING PRESSES

ARE THE STANDARD

Hydraulic or Knuckle Joint
Any Size .. Any Power

**Boomer & Boschert Press Co.**

338 West Water S., SYRACUSE, N. Y.
Southern Agent, A. H. WASHBURN, Charlotte, N. C.



HYDRAULIC.

# Two Cutters Saved

For every three employed. In other words, the

## Eastman ELECTRIC Cloth Cutter

with ONE operator does the work of THREE expert hand cutters. It is being used on a great variety of knit fabrics. If you employ more than one cutter, we have a money making proposition to offer you. Write for particulars.

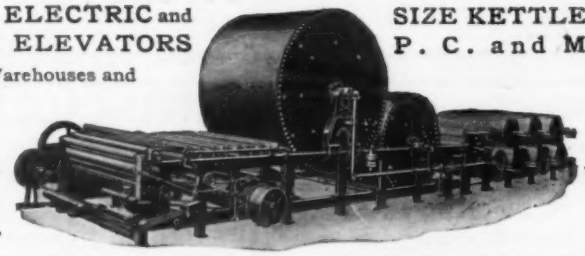
**Eastman Machine Co., 45 No. Division St., Buffalo, N. Y.**

# The COHOES SLASHER.

BELT-DRIVEN, ELECTRIC and HAND-POWER ELEVATORS
For Cotton Mills, Warehouses and Factories.

PULLEY BLOCKS.

OVERHEAD TRACKS.



SIZE KETTLES. REPAIRS for P. C. and M. MULES and EMPIRE LOOMS.

WATERWHEEL GOVERNORS.

The COHOES IRON FOUNDRY & MACHINE CO. Cohoes, N. Y.

Your Safety Depends on the Efficiency and Strength of Your Valve.
BETTER BE SAFE THAN SORRY.

Water-Relief Valve.

BUY CROSBY STEAM APPLIANCES WHICH ARE RELIABLE

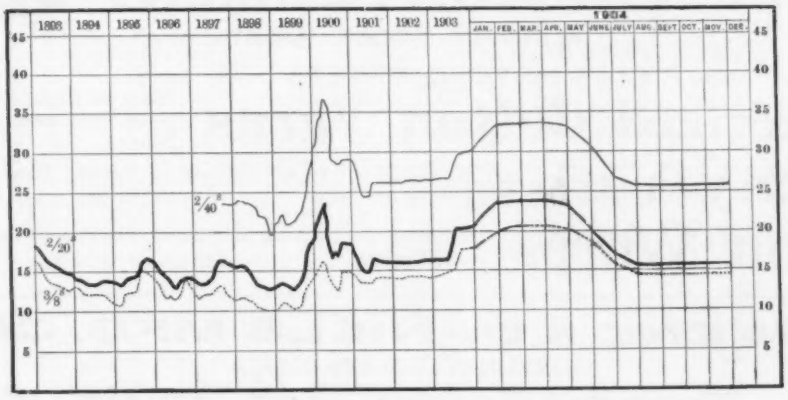
WRITE FOR CATALOGUE.
Steam Engine Indicators
Recording Gages
Blow Off Valves
Brandon Rubber Pump Valves
Single Bell Chime Whistles
Feed Water Regulators
Lubricators
Pressure and Vacuum Gages
Water Gages, Gage Glass, Etc.
ENGINE—BOILER AND MILL SUPPLIES

Pop Safety Valve

CROSBY STEAM GAGE AND VALVE CO.

Stores, BOSTON, NEW YORK, CHICAGO, LONDON. Office and Works, BOSTON, MASS.

# Yarn Department.




GRAPHIC CHART SHOWING RANGE OF PRICE OF COTTON YARN TO DATE.

## The Cotton Yarn Market.

This has been largely a sellers market since our last report. The continued strength of the raw material and a revival of the goods market has strengthened the yarn market all round. Business has been of small dimensions owing to the unwillingness of buyers to stock up in advance. The current business, however, has developed in considerable volume, particularly for weaving yarns. Knitting yarns have been draggy, but there has been a strong undertone which has reflected general improvement in the trade. Spinners, dealers, weavers, and knitters have all become more optimistic and are looking forward to a prosperous business for some time to come. There is no longer an expectation that the price of cotton will return to its 8 cent level, in fact very few express a desire for such a level. High priced cotton has added vast amounts to the wealth of the Southern people and this has had immediate effect on improving business in all parts of the country. We quote as follows:

We quote as follows:

Eastern Cops.

| | |
|---|---|
| 6's | 17 |
| 8's | 17¼ |
| 10's | 17¾ |
| 14's | 18¾ |
| 16's | 19¼ |
| 18's | 19¾ |
| 20's | 20¼ |
| 22's | 20¾ |
| 24's | 21¼ |
| 26's | 21¾ |
| 30's | 22¾ |
| 34's | 23¾ |
| 36's | 24¼ |
| 40's | 25¼ |

On cones, ¾c. more up to 14's; 1c. more from 15's to 22's; 1½c. from 23's to 35's, and 2c. above that.

Eastern Two-Ply Skeins, Carded Peeler.

| | |
|---|---|
| 12's | 19½ |
| 14's | 20 |
| 18's | 21 |
| 20's | 22 |
| 24's | 23 |
| 26's | 24 |
| 30's | 25 |
| 36's | 26 |
| 40's | 27 |
| 45's | 31 |
| 50's | 35 |
| 55's | 39 |
| 60's | 43 |

Eastern Two-Ply Warps, Carded Peeler.

| | |
|---|---|
| 2/30's | 26 |
| 2/36's | 27 |
| 2/40's | 29 |
| 2/45's | 31 |
| 2/50's | 36 |
| 2/60's | 44 |

Egyptian Weaving Yarns.
Single Skeins Combed.

| | |
|---|---|
| 30's | 35 |
| 35's | 36 |
| 40's | 39 |
| 45's | 41 |
| 50's | 43 |
| 55's | 46 |
| 60's | 53 |
| 70's | 63 |

Two and Three Ply Skeins, Combed.

| | |
|---|---|
| 30's | 36 |
| 36's | 39 |
| 40's | 41 |
| 45's | 44 |
| 50's | 49 |
| 55's | 51 |
| 60's | 55 |
| 70's | 65 |

Carpet Yarns.

| | |
|---|---|
| 60-yd. double reel filling | 28 |
| No. 2 60-yd. double reel filling | 27½ |
| 1st quality 5/8 | 24 |
| 2d quality 5/8 | 23 |

# THE J. R. MONTGOMERY CO.,

**Windsor Locks, Conn.**

MANUFACTURERS OF

**Mercerized Cotton Yarns** Gives the High Silk-Like Lustre in Knit Goods and Woven Fabrics.

**Novelty Yarns** Boucle, Bourette and Spirals, in Cotton, Wool, Worsted, Mohair and Silk.

**Cotton Warps** on Beams, Jack Spools and Tubes. In Fancy, Twist, Colors and Printed.

---

## GREENE & DANIELS MFG. CO.,

COMBED, CARDED AND GASSED

**Yarns, Threads, Twines and Chain Warps,**

Colored and Bleached Yarns Furnished in any manner desired by the trade.

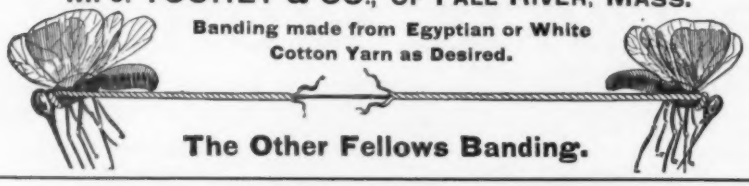
Pawtucket, R. I.

---

THESE MULES CANNOT BREAK THE BANDING —MADE BY—

M. J. TOOHEY & CO., OF FALL RIVER, MASS.

Banding made from Egyptian or White Cotton Yarn as Desired.



The Other Fellows Banding.

---

## MONUMENT MILLS,

Manufacturers of

White, Colored, Fancy and Double Twist

**COTTON WARPS**

HOUSATONIC, MASS.

4s to 60s.

---

## Dana Warp Mills

WESTBROOK, .. .. MAINE

White and Colored Warps 6s to 50s Single and Ply

Mule Cops From 30s to 50s from American & Egyptian Cotton

| | |
|---|---|
| 60-yd. double reel filling skeins | 10 |
| (on cops) | 11 |
| 120-yd. single reel cotton (on cops) | 11 |
| Wool ingrains, 42-yd. common | 7 |
| medium | 8-8½ |
| best | 11½ |
| extra best | 15 |
| light supers | 18½ |
| Super jute, 42 yard | 7½ |
| Super jute (light), 42 yard | 7½-8 |
| Velvet wool, spun, 135 yds., white | 33 |
| Gray | 32 |

## Philadelphia Yarn Market.

The yarn market recently has been rather hard to analyze. It has been up and down and at present we have the unusual situation of a strong weaving yarn market and a rather weak knitting yarn market. The weaving yarn spinners have been able to maintain and to advance prices slightly in the face of the recent decline in the cotton market, and while business has been very fair on weaving yarn, we believe considerable of this advance has been obtained by spinners on account of the firm stand they have all taken for the schedule prices adopted by the Southern Yarn Spinners' Association.

While there has been no boom in business since the election, things have been more satisfactory and it looks as if lines were being laid for a good business in all textile branches. The sharp advance in the price of woolen and worsted yarns will undoubtedly compel some mills to use cotton more largely. We expect to see prices on yarn hold firm. There is no accumulation of stocks in any of the yarn centres, and this will tend to keep the market firm and in sellers favor.

The prices on combed Egyptian yarns have advanced sharply during the month.

We quote prices about as follows:

Southern frame spun cones:—

| | |
|---|---|
| 7's and Coarser | 17 |
| 8's and 9's | 17¼ |
| 10's | 17½ |
| 12's | 18 |
| 14's | 18½ |
| 16's | 19 |
| 18's | 19½ |
| 20's | 20 |
| 22's | 20½ |
| 24's | 21 |
| 26's | 21½ |
| 30's | 22 |
| 40's | 26½ |
| 50's | 32½ |

Southern high grade mule yarn:—

Cones.

| | |
|---|---|
| 10's | 18½ |
| 12's | 19 |
| 14's | 19½ |
| 16's | 20 |
| 18's | 20½ |
| 20's and 22's | 21-21½ |
| 24's | 22 |

PAULSON, LINKROUM & CO.
Successors to BUCKINGHAM, PAULSON & CO.
Commission Merchants
COTTON YARNS of all Descriptions
83 Leonard St., NEW YORK
302 Chestnut St., Phila. 210 Munroe St., Chicago, Ill.
Cash Advances, Cash Sales and Prompt Returns. Consignments and correspondence solicited.

JAMES E. MITCHELL CO., COMMISSION MERCHANTS.
Cotton Yarns
FOR ALL PURPOSES.
122-124 Chestnut Street, PHILADELPHIA, PA.
Brown Building, 185 Summer Street, BOSTON, MASS.

CATLIN & CO.,
Cotton Yarns
345 Broadway, NEW YORK.
67 Chauncy Street, BOSTON.
206 Chestnut Street, PHILADELPHIA.
605 Medinah Temple, CHICAGO.

Harding, Whitman & Co.,
Dry Goods Commission Merchants,
COTTON AND WORSTED YARNS.
BOSTON. NEW YORK. PHILA.
CHICAGO. BALTIMORE. ST. LOUIS.

A. D. SALKELD & BRO.,
With FRED'K VIETOR & ACHELIS,
YARNS.
66-72 LEONARD STREET, - NEW YORK.

Fred Sternberg & Co.
530 Broadway, - NEW YORK.
MERCERIZED TURKEY RED GASSED } COTTON YARNS.

E. D. LORIMER & CO.
COTTON YARNS } ALL NUMBERS
MERCERIZED YARNS } FOR ALL PURPOSES
346 BROADWAY, NEW YORK.

MOELLER & LITTAUER,
SILK, WORSTED, WOOLEN YARNS COTTON AND MOHAIR
Polished Threads and Tinsel. Artificial or Wood Silk.
Mercerized, Turkey-Red, Fine Gassed Yarns.
109 GREENE ST., NEW YORK

CAPACITY, 50,000 Spindles. **ORSWELL MILLS** FITCHBURG, MASS.

COMBED **COTTON YARNS** CARDED

In Chains and Skeins, on Balls, Beams, Spools—Single or Twisted.

**THE MALCOLM MILLS CO.,**

MANUFACTURERS OF

**FANCY YARNS and POLISHED THREADS.**

Offices: 229 Chestnut St., Philadelphia.

Mills: Frankford, Pa.

**KROUT & FITE MANUFACTURING CO.,**

Manufacturers of

**Silk, Cotton and Mercerized Narrow Fabrics**

**Spool Tapes a Specialty.**

Telephone Connection. Office and Mill, Allegheny Ave. and Emerald St., PHILADELPIA.

**Walcott & Campbell Spinning Co.**

**Fancy Hosiery Yarns**

**IN ALL COLORS**

New York Mills, Oneida Co., New York

**A. G. THURSTON & SON,**

MANUFACTURERS OF

**Fluted Rolls, Pressers for Flyers**

**AND GENERAL MACHINERY**

Specialties made of Renecking, Refluting, Filing and Honing of all kinds of Rolls. Flyers Repaired and Fitted with any desired style of Pressers, Spindles Straightened Restepped and Retopped.

Box 528. FALL RIVER, MASS.

Indian Orchard Company
Cotton Warps and Yarns.
In Gray and all Colors, Single or Two or more Ply, and Cable Cord.
Novelty Yarns.
in Various Patterns, Colors and Twists.
Carded and Colored Cotton.
For Mixing with wool, Machined or in Roving.
Indian Orchard, Mass.

| | |
|---|---|
| **Southern frame yarn, lower grades:—** | |
| 6's and 8's | 17 |
| 10's | 17-17½ |
| **Eastern cones (high grade quality):—** | |
| 10's | 19 |
| 12's | 19½ |
| 14's | 20 |
| 16's | 20½ |
| 18's | 21 |
| 20's and 22's | 21½-22 |
| Skein yarn (mostly Southern):— | |
| 4's to 8's soft | 16½-17 |
| 10's to 12's | 17¼-17½ |
| 14's to 20's | 18-19½ |
| 22's | 20 |
| 14/2 | 18½ |
| 16/2 | 19 |
| 20/2 | 20 |
| 30/2 | 22½ |
| 40/2 | 27 |
| 16/3 slack | 18½ |
| 12/3 slack | 18 |
| 8/3 carpet | 17 |
| 8/3 slack | 17 |
| 9/4 slack | 17 |
| Warps (mostly Southern)— | |
| 10's to 12's | 17½-17¾ |
| 14's | 18-18¼ |
| 16's | 18¼-18½ |
| 20's to 22's | 19½-20 |
| 26's | 21 |
| 14/2 | 18½ |
| 16/2 | 19 |
| 20/2 | 20 |
| 24/2 | 21 |
| 30/2 | 22½ |
| 40/2 | 27½ |
| Mixed colored yarns (mock twist, half colors):— | |
| 6's to 10's | 18-18½ |
| 12's to 14's | 19-19½ |
| 16's to 18's | 20-20½ |

Silver and jaeger, 1½c. over white.
Mock Egyptian, 2c. advance over white.
Egyptian, 4c. to 5c. above best quality white.

## Worsted Yarn.

Although spinners continue busy the orders for immediate delivery will soon be at an end. Many orders were secured before the election, but this yarn will not be delivered until the heavy weight season begins, and what that season will develop no one is in a position to predict. Certain it is the weavers did not know what yarn to order and some of them speculated and some did not cover wholly because they did not know what their requirements were to be. Those who bought on speculation state that some of the yarn purchased for delivery during the heavy weight season will not be used and that they will cancel if the spinner will allow them. If not they will take the yarn and endeavor to sell on the market.

Some of the weavers say that the 1/4 and 3/8

TRY OUR
Silkine, also Lisle Silk
FINISH
—FOR—
Hosiery, Knit Goods, Yarn, Fast Black, Harsh Colors, and Fibres.
O. K. SOAP CO., 968 Franklin St., PHILA.

LINEN YARN IMPORTER.
HUGHES FAWCETT, 115 Franklin Street, NEW YORK.
Flax, Hemp and Jute Line and Tow Yarns, For Weaving Purposes.
Linen Jacquard Harness Twines, Fine Cotton Harness and Heddle Twines, For Cotton, Silk, Woolen and Carpet Manufacturers.
Correspondence solicited. Samples promptly furnished

Mercerized and Plain
Skein, Warps, Cones, Cops, Tubes
COTTON YARNS
426 and 428 Market St., Phila.
Theo. H. Strouse & Co.

Ballou Yarn Co.
PROVIDENCE, R. I.
Harness and Seine Twines and other Job Gassing, Winding, etc. All Numbers.
GASSED.·.YARN.·.SPECIALTIES

American Cotton Yarn Exchange
COMBED and CARDED
COTTON YARNS
From Northern and Southern Mills.
American, Egyptian, Peruvian and Sea Islands.
ARNOLD B. SANFORD, Pres. and Gen. Mgr.
PERCY H. de MAURIAC, Vice President.
OFFICES: 67 Chauncy St., Boston.
240 Chestnut St., Philadelphia.
108 Franklin St., N. Y. with James Talcott.

F. C. BARTON
MANUFACTURER OF LILY BRAND NARROW FABRICS
RIBBONS, TAPES, BINDINGS & NON ELASTIC WEBBINGS
54 FRANKLIN STREET, NEW YORK

# ALLEGHENY WORSTED MILLS,

Thomas Wolstenho'me Sons & Co.,
MANFRS. OF
ALL NUMBERS
SINGLE AND TWO-PLY,
On Cop or in Skein, for Weaving and Knitting Purposes, in White, Natural and Fancy Mixes.

Worsted
YARNS
Sell Direct,
Office and Mills, Frankford Ave. and Westmoreland St., Phila, Pa.

## Pocasset Worsted Company,

# WORSTED YARNS
IN THE GRAY.

Mills at
Thornton, R. I.

Office
100 Boylston St., Boston, Mass.

# CRANSTON WORSTED MILLS.

Worsted and Mohair Yarns—White or colors, in skeins, on spools, cones, or shuttle bobbins.

*Novelty Yarns*—of Mohair and Worsted. We are the only manufacturers in the United States making these yarns from the raw material to finished product and making yarns only.

*Genapped Yarns* of all kinds. Doup Yarns. Harness Yarns. For Braids, etc.

DYERS OF YARN AND SLUBBING. BRISTOL, R. I.

French System. Bradford System.

## B. F. BOYER CO.,

MANUFACTURERS OF

# WORSTED AND WOOLEN YARNS,

Office and Mill, Delaware and Cooper Streets. CAMDEN, N. J.

# Woolen and Merino YARNS

Eaton Rapids Woolen Mills,
EATON RAPIDS, MICH.

## EDDY & STREET,

Cotton, Woolen,
# Yarns and Braids
Worsted, Spun Silk.
PROVIDENCE, R. I.

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SELLING AGENT FOR

**Bristol Worsted Mills,**
**Highland Worsted Mills,**
**Loridan Worsted Co.,**

17 Bank St., PHILADELPHIA, PA.

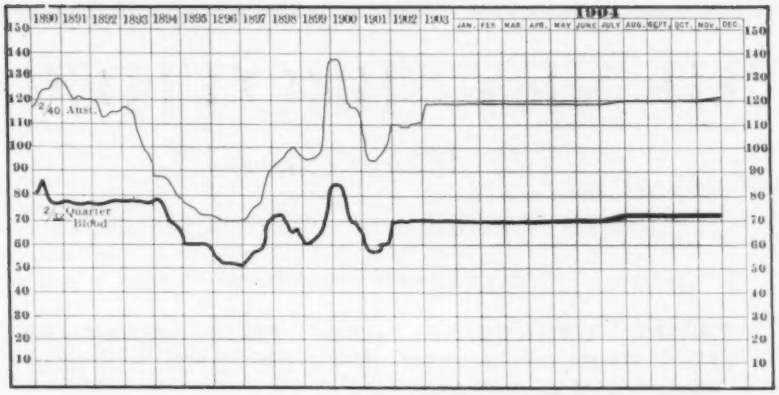



CHART SHOWING RANGES OF PRICE OF WORSTED YARNS.

blood yarn will cause them the most trouble as buyers are taking a better class of cloth for the same money as the cost of the 1/4 blood yarn. Some of the weavers who have heretofore used much worsted yarn have not purchased any this season, but loaded their mills with orders which will run them entirely on cotton worsteds, and cotton yarn will be substituted for worsted yarn; and this where production heretofore has been largely worsted yarn. The coming season calls only for southern cotton yarn. Many of the weavers are buying double and twist cotton yarn to make an imitation mercerized worsted cloth.

Notwithstanding the shortage of orders, spinners absolutely refuse to take orders for further shipments. They are willing to take a moderate order for immediate shipment, but will not take orders far ahead. This is the talk of the worsted yarn salesmen, but we have yet to see any orders turned down when offered at prevailing prices. Some of the spinners find in some instances that other spinners who bought wool early are able to sell yarn to the spinners cheaper than wool can be bought and put into yarn on the machinery of the spinner who must buy wool on the present market.

The price of quarter blood worsted wool ranges at 54 cents, as compared with 39 and 40 cents one year ago. Worsted wools and yarns are owned very unevenly the present season. Some of the larger manufacturers bought early and therefore own wool much cheaper than the manufacturers who held out of the market. The result of all this is that the large manufacturers will dominate the market at prices which will mean a profit to them,

SILK NOILS AND SILK NOIL YARNS
In White and Colors.
A. T. SKERRY & CO., 47 Leonard Street, NEW YORK.

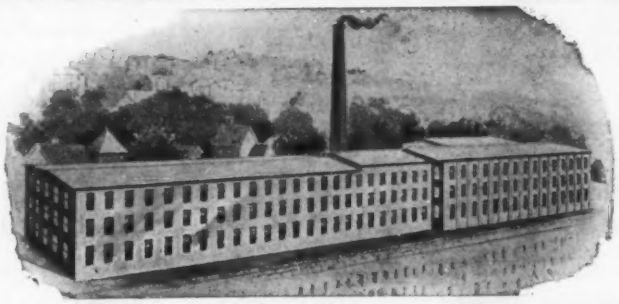
MOHAIR LOOPS, KNOTS AND FANCY YARNS FOR DRESS GOODS & CLOAKINGS.

QUEENSBURY MILLS WORCESTER MASS.

MOHAIR TOPS AND YARNS FOR WEAVING

LUSTRE YARNS FOR SERGE LININGS

ALPACA YARNS



SPINNERS OF MOHAIR YARNS FOR ZIBELINES

DRESS GOODS YARNS
KNITTING YARNS
WORSTED YARNS

MOHAIR

# CHENEY BROTHERS,

*Silk Manufacturers,*

SOUTH MANCHESTER, CONNECTICUT.

TRAMS, ORGANZINE AND SPUN SILKS IN THE HANK, OR ON SPOOLS AND CONES.

SILKS FOR ELECTRICAL USES, INSULATION AND SPECIAL PURPOSES MADE TO ORDER.

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Pure Dye and Fast Colors Warranted.

## WILLIAM RYLE & CO.,

Foreign and Domestic

## Spun Silk Yarns and Noils.

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Importers of European and Asiatic Raw Silk.

**54 Howard St., cor. Mercer St., NEW YORK.**

## SAUQUOIT SILK MFG. CO.,

*INSULATING AND BRAIDING SILKS.*

**ORGANZINE, TRAM & HOSIERY SILKS.**

Fast Dye Organzines for Woolen Manufacturers a Specialty.

Mills: Bethlehem, Pa., Phila., Pa., Scranton, Pa. New York Representatives, Wm. Ryle & Co., 54 Howard St.—Phila. Office, 4015 Clarissa St., Nicetown.—Chicago Office, 210 Monroe St.—Boston Office, 78 Chauncy St.

# Crochet Lace Edgings

Spun Silk, Splicing Yarn, Mercerized Yarns, Cotton Warps, Sewing Threads, Tapes, Braids, Domets, Cambrics, Silesias. : : :

Write for Prices and Samples. **George W. Chapin** 229-231 Church St. PHILADELPHIA

and which the smaller manufacturer could not name and come out whole in the transaction. The consequence of this will be that the smaller mills will be obliged to make imitations or lose one season's work. Just where the benefit to spinners who depend upon these smaller mills for orders is coming from with these high prices is not plain at this writing, because weavers say they will not run their plant at a loss and if the larger mills run and the smaller mills are not able to compete the spinners will either have to meet the prices the smaller mills can pay or be forced to shut down likewise.

Spinners state that tops are being offered at prices higher than are being paid for yarn. The present outlook is viewed in two ways. One maintains that the present condition of affairs will result in making buyers of cloth cautious, and a hand-to-mouth business will result. The other side maintains that the next 60 days will witness a great revival of business, that buyers of cloth and all kinds of wool and worsted fabrics must purchase largely; that none of them have stocks, that last heavy weight season was a good one which cleaned out all old stocks and the coming season will call for much cloth at any prices. They substantiate this by the fact that some weavers have had orders during the light weight season for heavy weight cloth. This is something which never happens except where a great shortage exists.

The underwear manufacturers using worsted yarn have secured some large orders at advanced prices. Personally, we do not see that so far as the weavers are concerned, at least at present, they have the business talked of, but everything depends upon the coming heavy weight season. If there is a great shortage of cloth in the hands of clothiers those mills that can name low prices will have the most business. Prices on 1/4 blood yarn have advanced 12 cents per pound and on 1/2 blood yarn 7 cents per pound over last March.

We quote as follows:

| | |
|---|---|
| 2/40's Australian | 1.20 |
| 2/40's XX Delaine | 1.10 |
| 2/40's Half Blood | 1.05 |
| 2/20's Half Blood | .85 |
| 2/36's 3/8 Blood | .75 |
| 2/26's 1/4 Blood | .68 |

TELEPHONE SYSTEMS
Especially adapted for MILL USE.
Write for Catalogues.
The North Electric Company.
178 St. Clair St., CLEVELAND, O.

JENCKES SPINNING CO.,
Formerly E. JENCKES MFG. CO.
Carded and Combed Cotton Yarns for Weavers and Knitters.
Double and Twist Yarns for Woolen Trade.
PAWTUCKET, R. I.

WILLIAM B. CHARLES,
Cotton Yarns,
Cotton Cloth,
Silesia, Sateens,
For the Underwear Trade.
AMSTERDAM, N. Y.

GRANT YARN CO.,
COMBED AND CARDED COTTON.
YARNS 40's and above. AND WARPS
FITCHBURG, MASS.

FLOSSETTE MILLS
of the
New England Thread Co.
CENTRAL FALLS, - - R. I.
(DYERS and BLEACHERS) and MANUFACTURERS of
High Class Threads on Tubes, Spools and Cones and MERCERIZED YARNS for Knitting.
GLAZING OF YARNS
For the Shoe Lace, TAPE and WEBBING TRADE.

C. MOORE & CO.,
Manufacturers of
TWINES, THREADS AND YARNS,
Jacquard Harness Twines of all kind on hand and made to order.
S.W. Cor. Fifth and Market Sts., Phila.

Knitting and Weaving
YARNS.
Cones, Cops, Warps, Skeins,
Single, Double, Three-Ply, etc.
Peeler, Egyptian, Mixed Colors.
Large Assortment.
EDWARD S. HYDE,
226 CHESTNUT STREET,
Philadelphia, Pa.

**Of Two Evils, Choose Neither!**

Don't use fluid oils, and oil your belts, your floors and your goods, as well as your bearings.

Don't use greases, which don't feed till the bearings grow warm, and leave a gummy residue behind, causing an increase of 25 or 30 per cent in the friction load.

Use **NON-FLUID OILS**, which don't drip like the corresponding fluid oils, nor inflate your coal bill like greases.

Our booklet tells why. May we not send it to you, with free samples to prove our claims? Better write to-day.

**NEW YORK & NEW JERSEY LUBRICANT CO.**
17 Church St., New York City.

**JOSEPH M. ADAMS CO.**
**WOOLEN YARNS,**
Carpet Backing and Rug Yarns a Specialty.
ARCOLA MILLS,
Main St., foot of Centre St., Manayunk, Phila.

**Woolen and Merino Yarns,**
1 to 10 Runs, at reasonable prices.
All Wool, Mohair and Wool Spun or Mixed Cotton and Shoddy Yarns, in white, gray, and colors.
Dress Goods Yarns a Specialty.
E. M. ROCKWELL, - - LEOMINSTER, MASS.

**E. G. HARPER,**
**WORSTED and WOOLEN YARNS,**
MERCERIZED COTTON,
395 BROADWAY, TEL. 1928 FRANKLIN NEW YORK.

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WORSTED and WOOLEN
**YARNS**
A SPECIALTY.
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Long Distance Tel. 4168-2 Main.

**YARNS** Solis, Boston.
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ANDREW J. SOLIS, Jr. & CO.

HOFFMAN, DeWITT & McDONOUGH,
Manufacturers of
Diamond Stay Bindings TRADE MARK
**Tapes, Webbing and Bindings.**
COTTMAN and G STS., PHILADELPHIA
Ryer's Station, P. & R. R. R.
Bell Telephone, 203 Cheltenham.

## Woolen Yarn.

Spinners of woolen yarn continue busy with orders from the knitters and hosiery manufacturers, and after the latter part of next month the weavers will require much woolen yarn, but as the machinery is so well employed it looks as if many will be unable to secure desired machinery space. It is an undoubted fact that as the heavy weight season for cloth is developed many of the small weavers, in order to meet competition, will substitute woolen yarn for worsted yarn, both in the filling and in the warp. Some of the popular weavers are heading that way now and many of the all worsted lines will be unsalable because of high prices and woolen yarn will be worked in as never before. Some of the weavers who own worsted yarn state that their agents give them most encouragement on the lines with the woolen yarns mixed with the worsted yarn, and many of the weavers expect to save themselves from the high prices of worsted yarn by using a goodly percentage of woolen yarns.

Many of the knitters using colored worsted yarn are buying wool spun yarn to take the place of worsted yarn. The commission spinners are the best employed. Sale yarn is more or less draggy, but this will be changed after the turn of the year, as much yarn is yet to be bought by the users of woolen yarn. The dress goods manufacturers will buy woolen yarn after the first of the year. Hosiery manufacturers have orders already in and the demand will be more pronounced as the season progresses.

The knitters throughout New York State are looking for a good run after the first of the year, but many of the stocks used the coming season will be greatly changed. There will be more Australian lambs' wool used and much thread waste will be imported. Many orders have already been booked at prices from 65 to 67 1/2 cents. This is the only way manufacturers will be able to secure fine material out of which to meet the popular prices. Buyers are trying to get underwear at old prices, and manufacturers are getting letters from their customers. Some of them state that they want to place orders but that they see no excuse or reason for knitters to advance prices, and it looks as if knitters would be able to sell all wool goods at last year's prices, if the cotton crop holds out.

Australian lambs' wool will sell at about 76 cents the coming year. The demand for black wool and black tops continues, but the supply is very limited and this will be felt more after the first of January. The outlook for woolen yarn is very good.

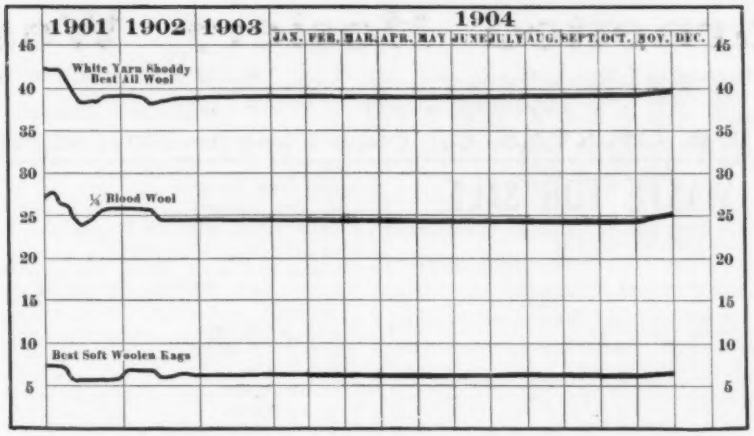


CHART SHOWING RANGE OF PRICES OF SHODDY, RAGS AND NOIL.

## Rag and Shoddy Market.

This market is very strong, dealers in rags maintaining prices at figures that are practically prohibitive. Owing to this attitude business has been restricted to narrow limits, manufacturers confining their purchases to immediate requirements. The reason for this situation is found in the strength of the wool market which is higher now than at any time within the last fifteen years. Whether the demand for goods will be sufficient to maintain the price of wool and wool substitutes at the present level is a problem in the correct solution of which every manufacturer and daeler is deeply interested.

The manufacturers of shoddy are not overcrowded with orders owing to the conservative policy pursued by spinners in the face of the high prices that are now asked. The election has been followed by a strengthening of confidence and the reluctance of manufacturers and shoddy men to place contracts at the present prices for rags is not by any means an indication of lack of confidence in the future, but is rather the natural attitude assumed by business men who do not want to buy raw material at a top price.

A curious feature of the situation is the small supply of rags. In spite of the strength of the market the supply of rags has not increased materially, but this will doubtless be remedied as the latent supply of rags is far in excess of the actual supply.

### SHODDIES AND EXTRACTS.

| | |
|---|---|
| White yarn, best all wool | 38-40 |
| White knit, all wool, best, fine | 28-32 |
| White knit, No. 2 | 23-25 |
| Light yarn, extra fine | 25-28 |
| New pure indigo blue | 23-25 |

*Merino.*

| | |
|---|---|
| Fine light, all wool, No. 1 | 24-25 |
| Medium light, all wool, No. 1 | 16½-17½ |
| Medium light, all wool, No. 2 | 14-16 |
| Fine black, all wool | 20-22 |
| Fine dark, all wool, best grade | 20-21 |
| Medium dark, all wool, No. 1 | 13-15 |
| Medium dark, all wool, No. 2 | 12-13 |
| Red knit stock, strictly all wool | 19-20 |
| Red flannel, all wool | 19-20 |
| Dark blue for hosiery, strictly all wool, No. 1 | 17-20 |
| Dark blue for hosiery, not all wool, No. 2 | 12-14 |

DELAINE EXTRACTS.

| | |
|---|---|
| Light | 19-22 |
| Medium light | 15-17 |

### WOOLEN RAGS.

| | |
|---|---|
| Regular gray | 12-13 |
| Black | 14-15 |
| Fancy colors | 16-20 |
| Fine merchant tailors, all colors | 9-11 |
| Choice light colors | 13-15 |
| Browns | 12-13 |
| Blacks | 9½-10½ |
| Fine blues, plain | 9-11 |
| Fine dark | 10-11 |
| Medium dark | 7-8 |

*Worsteds.*

| | |
|---|---|
| Blue | 16-18 |
| Black | 18-20 |

*Serges.*

| | |
|---|---|
| New black | 15-16 |
| New blue | 14-15 |

*Flannels.*

| | |
|---|---|
| New scarlet | 18½-22 |
| New blue | 17-18 |
| Cloakings | 3-4 |

SOFTS AND KNIT STOCK.

| | |
|---|---|
| Soft woolens, best | 7-7½ |
| Old white flannels | 14-16 |
| White flannels, No. 2 | 11-12 |
| Old red flannels | 9½-10 |

# Garnetted Hosiery Waste

In Cotton, Cotton and Wool Mixes, and All Wool. White and Light Colors a Specialty.

SEND FOR MONTHLY PRICE LIST.

**FRANK B. GRAVES, Cor. Church and Arch Sts., ALBANY, N. Y.**

## WOOL WASTE FOR SALE.

No. 41,390. About 20,000 pounds. Greyish brown mix. Fine medium quality, good staple.
No. 41,391. About 10,000 pounds. Straight black. Medium coarse, fair staple.
No. 41,392. About 8,000 pounds. Coarse dark brown mix. Short staple.
No. 30,163. About 60,000 pounds. Medium quality, good staple, dark brown mix.
No. 30,234. About 175 bags. Black. This is medium quality, good staple.

All the above lots are quite clean and dry, except the last number, which consists of about 70% of scoured wool card waste, and about 30% of unscoured. It also contains a small percentage of fast black cotton.
No. 30,163 shows about 25% of cotton. All other lots are supposed to be all wool. Samples sent on application.

**Address Dept. 7.**
**CHAS. W. BECKER, Agent, AMSTERDAM, N. Y.**

## WILLIAM B. CHARLES,

## Cotton and Cotton Wastes

**Amsterdam, N. Y., U. S. A.**

## COTTON YARNS.

Contracts made with Cotton and Woolen Mills for Yearly Waste Production. Correspondence solicited. Shepperson's Code, 1878. Cable Address "Charles."

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**WM. H. H. SLACK & BRO.,**
*Springfield, Vt.*

**Carbonized Stock a Specialty.**

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**RIVERDALE WOOLEN CO.,** MANUFACTURERS OF

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So it costs you NOTHING to have the AMERICAN WATCHMAN'S CLOCK Fully approved by all insurance companies. We equip factories with Fire Alarms, Signals, etc., also Employee's Time Recorders, and Telephone Systems. Electric Time System consists of Master Regulator in office with secondary electric clocks throughout the mill, insuring accurate time. Send for particulars.

**Pettes & Randall Co., 150 Nassau St., New York**


| | |
|---|---|
| Light blue flannels | 7½-9 |
| Old blue flannels | 6-7 |
| Fine worsted, new black | 26 |
| New blue clip, best, fine | 20-22 |
| Dark mixed yarn, extra fine | 22-24 |
| All wool yarn, medium and coarse grades | 15-20 |
| Old plaids | 5-7 |
| White stockings | 17-18 |
| White hood stock | 20-21 |
| Clear hoods | 9-10 |
| Red stockings | 9-10 |
| Blue stockings | 7-8 |
| Fancy stockings, No. 1 | 7-9 |
| Gray stockings | 9-10 |
| Black stockings | 9-10 |
| Knit stock comforters | 6-7½ |
| Red knit | 9-10 |
| Light gray knit | 9-10 |
| New light fancies | 16-18 |
| New fancies | 12-14 |

*Merinos.*

| | |
|---|---|
| Light, fine | 13½-15 |
| Light, coarse | 7½-8 |
| Fine, dark | 12-13 |
| Dark, No. 2 | 8-9 |
| Coarse dark | 5-6 |
| Blue | 12-13 |
| Blue-seamed | 13-14 |
| Black—unseamed | 12-13 |
| New black | 18-20 |
| Small | 3¼-4 |
| Printing | 6-8 |

**FLOCKS.**

| | |
|---|---|
| Shear, fine white, all wool | 9-11 |
| Fine indigo blue, all wool | 9-9½ |
| Fine black, and blue, all wool | 7-8 |
| Fine dark, all wool | 5-6 |
| Gig, fine, all wool | 3-4 |
| No. 1, black, all wool cut | 6-7 |
| All wool, fancy, shear and gig | 2½-3½ |

**NOILS.**

| | |
|---|---|
| Australian | 48-50 |
| Fine domestic | 38-40 |
| ½ Blood | 24-28 |
| ⅜ Blood | 22-23 |
| ¼ Blood | 17-19 |
| Braid | 21-22 |
| Carpet (white) | 14-18 |
| Carpet (colored) | 10-12½ |


## SOUTHERN and WESTERN MILLS!

Why not have your yarn dyed in the West saving time and freight? Prompt attention guaranteed.

**PHŒNIX STEAM DYE HOUSE,**
**12-18 Southport Ave., - . CHICAGO**
Cotton Yarns a Specialty.

*Seedy.*

| | |
|---|---|
| ½ Blood | 35-37 |
| ⅜ Blood | 27-30 |
| ¼ Blood | 23-26 |

**COTTON WASTE.**

| | |
|---|---|
| No. 1 Spinners | 9⅜-9½ |
| No. 1 Machine | 7-7½ |
| No. 2 Machine | 5½-6¼ |
| Machine Cop | 8-8¼ |
| No. 1 Cop | 9-9½ |
| No. 1 Card | 8½-9 |
| No. 2 Card | 7¾-8 |
| No. 1 Oily Card | 4¼-4½ |
| No. 2 Oily Card | 3½-3¾ |
| Peeler Combing | 10¼-10½ |
| Egyptian Combing | Limited quantity |
| No. 1 Linters | 5¾-6¼ |
| No. 2 Linters | 5-5½ |
| White Clips | 8-8½ |
| Colored Clips | 5-6 |
| No. 1 Picker | 2-3½ |

New York, Oswego. It is reported that the Kendall Knitting Co. proposes increasing the plant and that another story will be built to the center of the group of three buildings. They are also considering supplying the Standard Yarn plant with power for operation.

New York, Perry. Three additional sets of 60-inch cards are being installed in the Perry Knitting Company's mill.

New York, St. Johnsville. Work has been started on an addition, 40 by 40 feet, two stories, to the St. Johnsville Knitting Co.'s plant.

*North Carolina, Durham. The No. 2 mill of the Durham Hosiery Mills has been started up. Is equipped with 46 knitting machines and one sewing machine, for making men's half hose.

North Carolina, Newton. The Newton Hosiery Mills, manufacturing regular and seamless hosiery and flat and ribbed underwear, are to enlarge the plant. They now operate 200 knitting machines.

Ontario, Kingston. The Kingston Hosiery Company is adding a plant for manufacturing paper boxes and will soon have same in operation.

*Pennsylvania, Fleetwood. An addition is being built to D. F. Kelehner's hosiery mill.

*Pennsylvania, Herndon. George W. Malick, proprietor of the Lyons Knitting Mill, has removed plant to this place, where he expects to double the output.

Pennsylvania, Lyons. The American Knitting Mills, formerly at Reading, operate 32 knitting machines on men's fancy seamless half-hose. Paul Dreisel and Henry Polenz are the proprietors of the plant.

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**WARREN SOAP Mfg. Co.**
Products for
Woolen,
Linen,
Cotton,
Knitting and
Silk Mills,
Bleachers,
Dyers,
Finishers and
Calico Printers
Are Unequalled.
TRY THEM.
BOSTON, MASS.
Established 1870 Incorporated 1890

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Drying and Sulphur House Poles of Natural Round Water Grown Cedar for Cotton, Wool, etc. Special Hardwoods in Standard No. 1 and "Selects" without knots, grades, for Silk Dyeing. Manufactured by, prices and all information from
E. M. HAEDRICH,
601 Mariner and Merchant Bldg., ... Philadelphia.

*In Textile Mills*
**Warren's Pulley Cover**
is the best and most economical belt slipping preventative. It is used by many of the best mills in the United States.
Any careful man can apply it.
Sufficient for 40 sq. ft., $5; 125 sq. ft., $12.
If your supply house does not sell it, order direct.
The Warren Co., Mfrs., 25 E. Chicago Ave., Chicago, Ill.

**J. M. & J. S. NICOL,**
North Paterson, N. J.
**White Dextrine and Amylo Gum**
FOR FINISHING.
SEND FOR WORKING SAMPLES.

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Manufacturers of

**MERCERIZED YARNS**

FOR ALL PURPOSES.

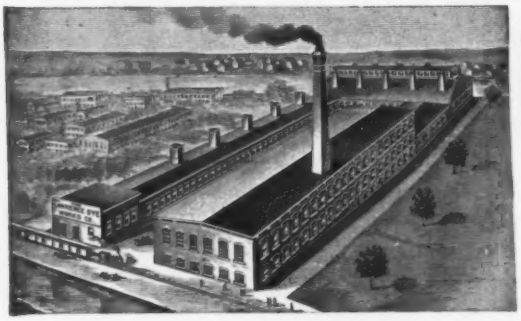
**MERCERIZERS AND DYERS.**

New York Office:
Room 911 New York Life Building,
346 Broadway.

Ontario and Lawrence Sts.,
PHILADELPHIA, PA.

# THE LAWRENCE DYE WORKS COMPANY

LAWRENCE, MASS.



## Dyers and Finishers

*Worsted and Cotton Yarns, Slubbing and Raw Stock.*
*Woolen and Worsted Men's Wear, Dress Goods, Cotton Worsteds.*
*WINDING AND SPOOLING.*

*Dealers in Colored Cotton Yarns.*

*Re-Dyers and Re-Finishers of Worsteds and Woolens.*

NEW YORK OFFICE, 52 HOWARD STREET.

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DYERS, BLEACHERS AND **MERCERIZERS**

*OF COTTON WARPS AND SKEIN YARNS.*

Globe Bleach and Dye Works,
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## We are Dyers of all kinds of YARNS Cotton AND Warps

We are sure we can give you better work and better service that you can get elsewhere. A trial will convince.

**T. BROPHY'S SONS, Jasper St., above Clearfield St., - PHILADELPHIA, PA.**

## WE DO BLEACHING and DYEING

ESPECIALLY FOR THE **KNIT GOODS TRADE**

YARNS BLEACHED AND DYED (delivered on cones)
CONE WINDING FOR THE TRADE.

**Schuylkill Haven Bleach and Dye Works,** SAMUEL ROWLAND, **Schuylkill Haven, Pa.**

N. B. Bleached Finishing Yarns on Cones for Underwear, always in Stock.

## INGRAHAMVILLE DYE WORKS,

**Dyers and Bleachers** of Cotton Yarns in long or Short Chain Warps and Skein, in FAST COLORS, FOR BLEACHING PURPOSES, Cross Dyeing, Ginghams, Etc.

Also Dyers of Turkey Reds and Indigo Blues for all purposes in either Warp or Skein.

Telephone. PAWTUCKET, R. I.

# FIRTH & FOSTER CO.,

*Dyers and Finishers* of Dress Goods, Men's Wear and Cloakings, such as Venetians, Armures, Soleils, Crepons, also Silk Warp Fabrics, Cotton Warp Linings, Suitings, Clays, Serges, Worsted Damasks, Tapestries and Shirtings.

Particular attention given to Fast Colors on Cotton and Worsted Yarns, Slubbing and Stock Dyeing. Special Black for the Silk Trade on Fine Cotton Yarns.

MAIN OFFICE AND WORKS:

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*BLEACHING, DYEING and MERCERIZING* of all grades of Cotton Yarn,

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Fast Colors for the Woolen Trade. Capacity 20,000 lbs. per day.

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A NEW DIRECT DYEING Sulphur Black for Cotton

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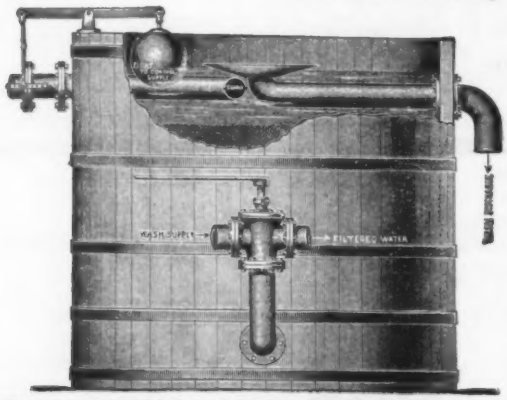

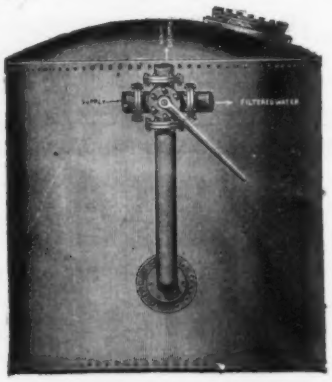

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**Our filters are already in use in a number of the representative textile mills of the country, from whom we have received many expressions of satisfaction. Our representative will call and explain our system whenever desired.**

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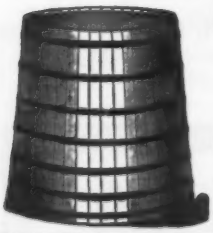

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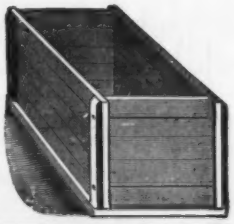
**For Bleaching, Dyeing and Finishing.**

*Reservoir Tanks of any Capacity or Shape for Sprinkler Systems and all purposes.*



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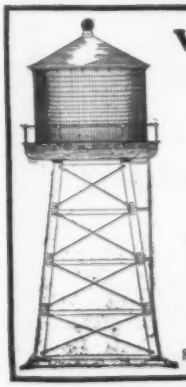

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**For Fire Protection.**

DYE TUBS, VATS AND TANKS FOR EVERY PURPOSE.
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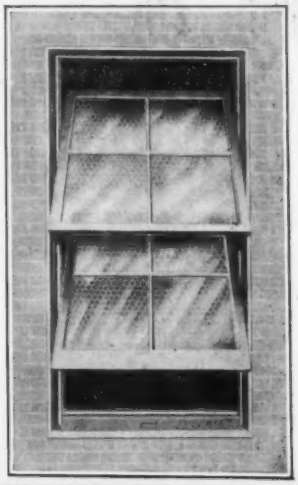

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Protection against the Blasts of Jack Frost as well as against the Tongues of the Fire Demon. Economy and safety.

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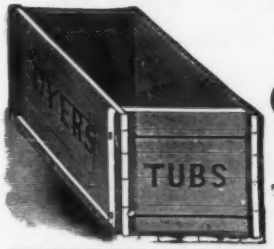


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*"Absolutely Safe and Reliable. Ask Your Friends."*

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One reason why our tanks do not leak, give no trouble and need no watching is because every part is made by experts who have had years of experience. We can tell you other reasons.

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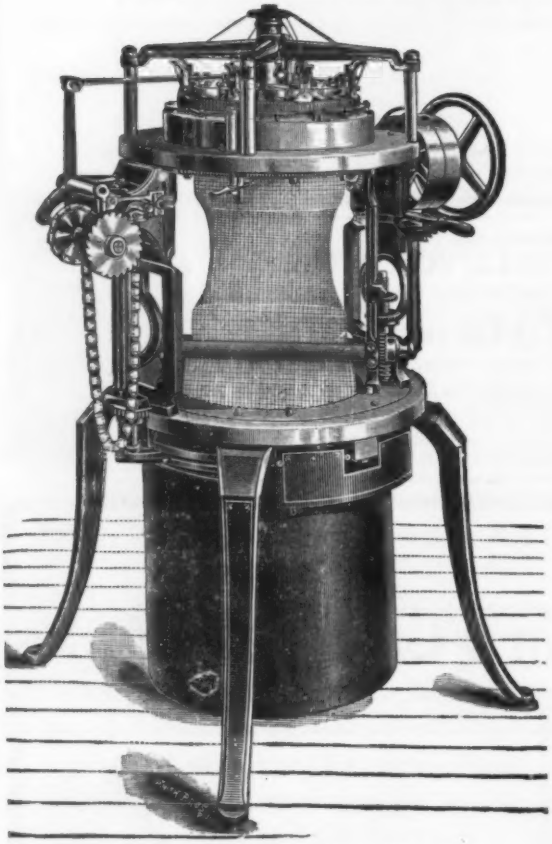
**AUTOMATIC AND PLAIN**

**For all classes of Ribbed Hosiery and Underwear, Combination Suits, Sweaters, etc.**



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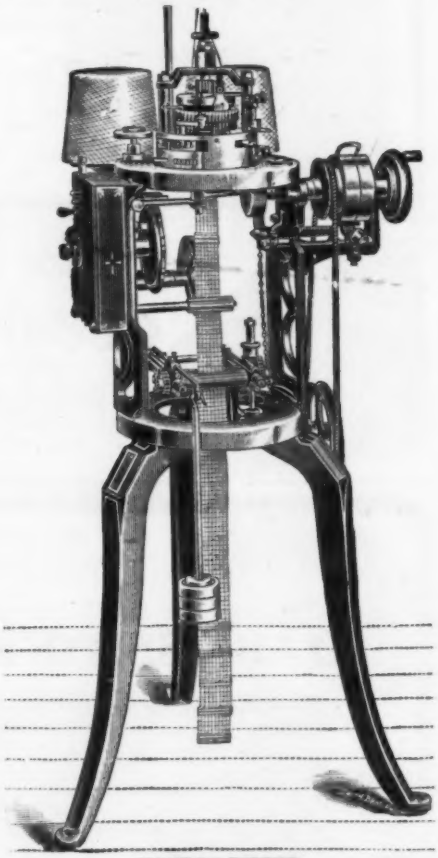

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ESTABLISHED REPUTATION FOR LARGEST PRODUCTION, BEST QUALITY FABRIC, DURABILITY, ECONOMY OF OPERATION

Full Particulars, Description and Samples Furnished upon Application to the

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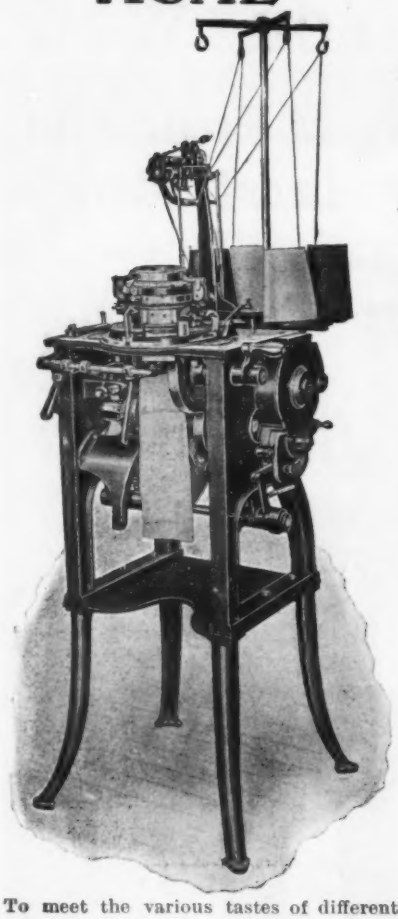

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## Fully Automatic Hosiery Knitters

**For Making all Kinds and Gauges of Seamless Hosiery**

**HEMPHILL**

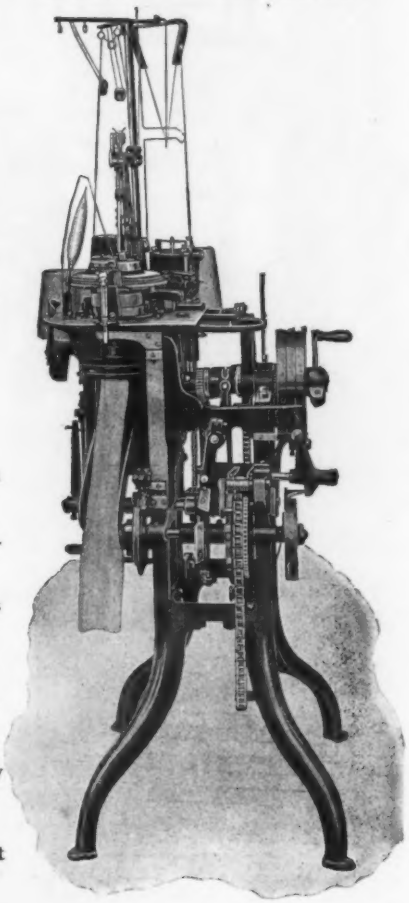
One with

**GEARS**

the other with

**CHAIN**

for pattern mechanism



To meet the various tastes of different manufacturers. Both used and approved by leading hosiery manufacturers.

**Both contain all the well-known essentials demanded of first-class knitting machines.**

With these two machines we can supply all the manufacturer's possible wants in the best possible manner.

***Write us for further particulars and prices.***

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Many leading manufacturers use our needles and say they are the best on the market.

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This machine can be seen in operation at his office.

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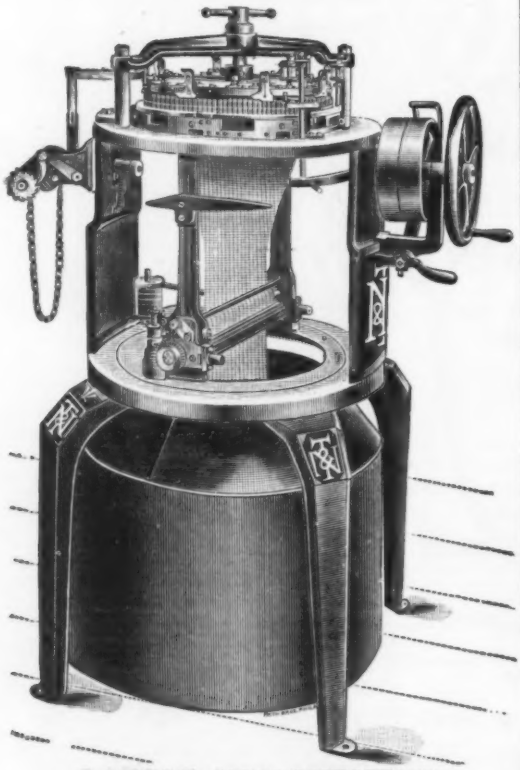
## Circular Rib Knitting MACHINERY

For making Ribbed Underwear, Combination Suits, Sweaters, Cuffs, Shirt Borders, Hosiery, etc. : ; :

Correct Construction. Excellence and Durability.



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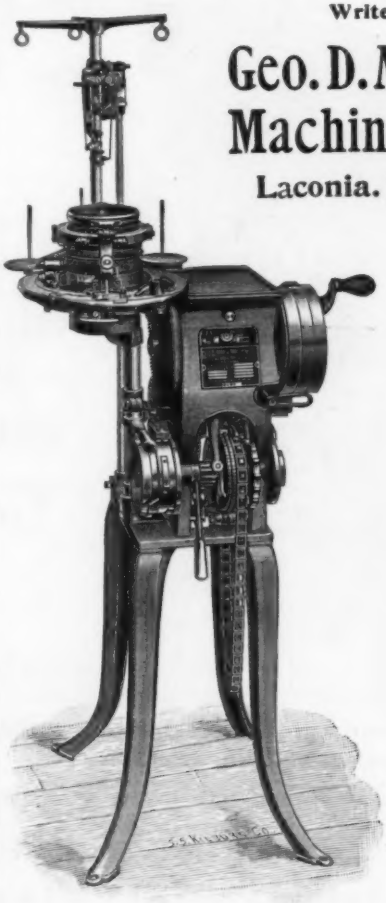

Latest, Simplest, Best.

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New Full Automatic Knitter.

The Old Reliable

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EDGINGS AND BRAIDS.

Unequalled Facilities for Prompt Deliveries of Any Quantity.

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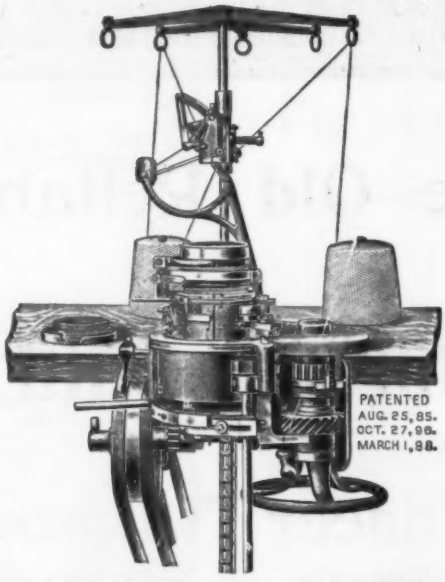
The "INVINCIBLE" is reasonable in price.

It's best advertisement—the recommendation of its users.

Its METHOD of TRANSFERRING is still the best.

Others try to imitate.




Full Automatic Knitting Machine

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Leads Them All.

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High Speed Overseaming, Overedging and Scallop Stitch Machines

are LIGHT RUNNING, FAST and DURABLE.

OUR NEW STYLE 60 MACHINE for Trimming and Overseaming in one Operation produces the strongest, best Seam and does it with the greatest economy.

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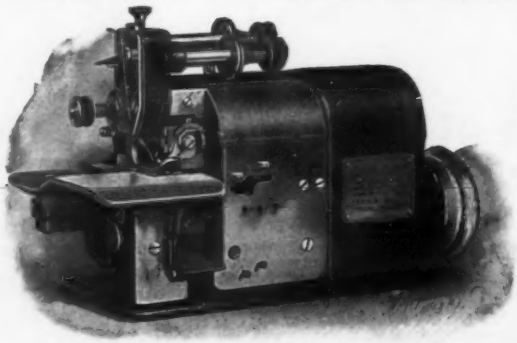
For Necks and Fronts of Rib Goods, produces the most showy, substantial finish.



USE STYLE 17 or 22 for Bed Blankets and STYLE 18 for Horse Blankets.

Send for Catalogue and Samples.

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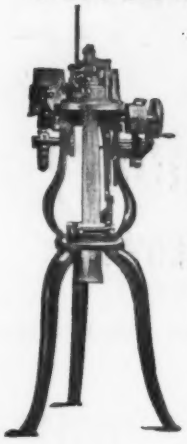

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Automatic Welt and Loose Course Machines for Stock Tops. New Circular Stripers with Welt, Loose Course and Striping (Automatic), for Short Cuffs, Sock Tops, Hose Legs, Wristers, etc.

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For Men's Underwear, Ladies' and Misses' Hose Legs and Leggins. Correspondence Solicited.

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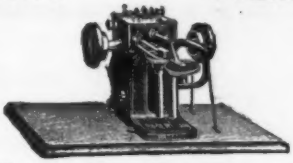

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well put on, wire costing one cent per 1000 stitches.

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Gentlemen:—

Since using your Brehmer Wire Stitching Machine, we have impressed on each garment over 2000 dozen at a cost of only 40c. outside the price of machine. Whereas the same amount of pin-fastners would have cost us $13.00.

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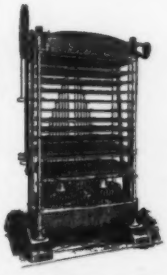

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The most reliable machine of the kind on the market.

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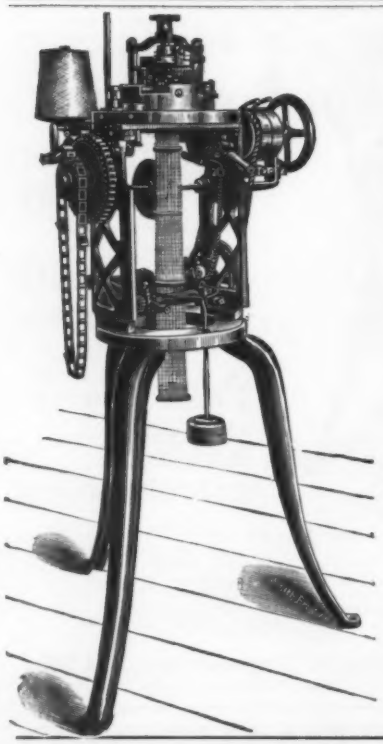
Specialty made of **Fine Buttons** for high grade goods, including pearl, ivory, cloth and metal.

Send for samples and prices. N. Y. Office, 826-828 Broadway.



# H. Brinton & Co.

**213-215 Race Street, Philadelphia, Pa.**

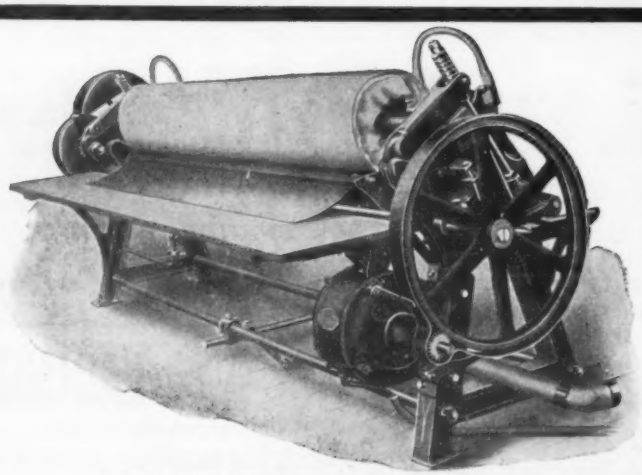
BUILDERS OF

## Knitting Machinery

**For HOSIERY and UNDERWEAR.**

***Complete Estimates Furnished. Send for Particulars.***

The cut shows our **Improved Automatic Ribber** with Welt and Slack Course for Half Hose, Tops and Ribbed Legs.



Watson Textile Motor Direct Connected to Mangle.

## Every Year

THE LOSS THROUGH POWER WASTED BY BELTS AND SHAFTING in the UNITED STATES EXCEEDS THE LOSS BY FIRE.

You insure against fire why not insure against wasted power by using Direct Connected Electric Motors.

## WATSON TEXTILE MOTORS

**Are Especially Designed to Fit the Needs of Textile Plants.**

If you wish your clothes to fit you buy them "made to order" not "already made."
Why not have your motors "made to order" and have them fit the work.

Send for Bulletins.

**The Mechanical Appliance Co., Milwaukee, Wis.**

# CIRCULAR KNITTING MACHINES

Either plain or full automatic, with stop motions complete, for

**Ribbed Underwear, Sweaters, Cardigans, Cuffs and Anklets.**

**The Leighton Circular Machines** are the only ones which **Rack** or **Shog** the needles for fancy borders; also built for automatic striping; and with from 4 to 16 feeds for underwear.

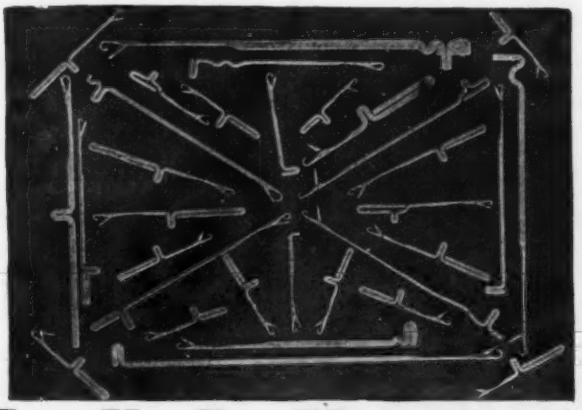
**Also Builders of ABEL WINDERS, SEAMERS and LOOPERS.**

**LEIGHTON MACHINE CO.,**
**Manchester, N. H.**

---

## Latch Needles

For all Knitting Machines.



## Our Superior or Sunken Rivet Head Needles

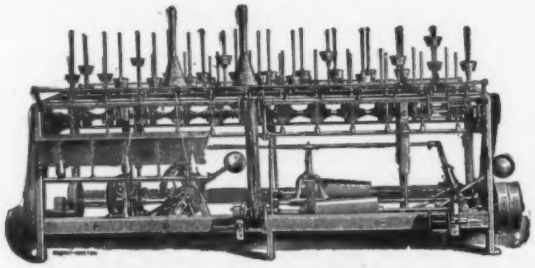
Will save you money every day in the year.

**Dodge Needle Co., Manchester, N.H.**

---

We now build, with or without differential motion, for winding on Bobbins from Skein or Cop,

# THE ABEL WINDERS



ALSO THE

## Abel Seamers and Loopers

IN CONNECTION WITH OUR LINE OF

**AUTOMATIC RIB KNITTING MACHINERY.**

**LEIGHTON MACHINE CO., Manchester, N. H.**

# JAMES TAYLOR,

835 Arch Street, - - - Philadelphia, Penn.

## KNITTING MACHINERY

**OF ALL KINDS. NEW AND SECOND HAND.**

A RARE OPPORTUNITY TO BUY.

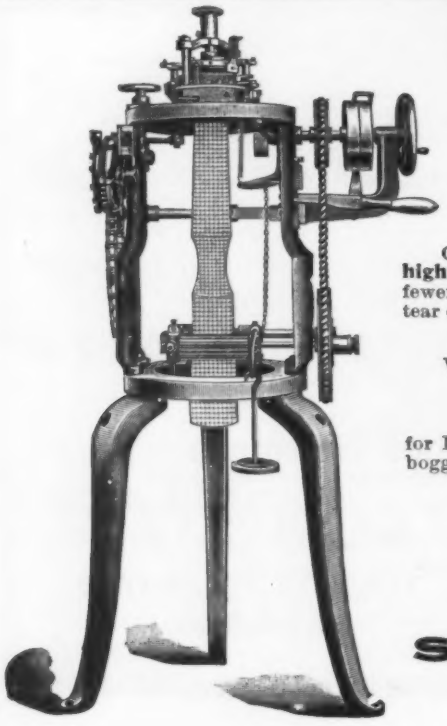
50 New Victors, various sizes.
28 Beattie & Hepworth & Abel loopers.
4 Corneley embroidery machines.
10 Hosiery presses (lever).
1 14 plate Crawford press.
11 Lamb and Grosser sweater machines.
150 Ribbed underwear machines, various sizes and makes.
1 Sensitive drill.
60 Brinton & Co. ¾ aut. knitters, sizes.
27 Standard A machines.
56 Union Special machines, various styles.
1 Rotary fire pump.
1 5 h. p. electric motor.
40 Mayo machines.
100 Brooks welters.
4 Fleecing machines.
98 Brinton & Co. and other make hosiery ribbers.
36 Jay needle machines, 176 needles, almost new
1 Wayburn fabric cutter.
40 Ribbed shirt machine cylinders and dials, all sizes, cuts and makes.
1 Smith & Drum singeing machines.
250 Doz. Cyclone underwear dryer.
1 Sandusky mangle, 60-inch.
1 36-inch engine driven extractor.
1 Hollow roller hosiery press.
2 Lindsay & Hyde winders.
2 No. 50 Merrow machines.
1 Grosser Jacquard machine.
2 Typewriters.
2 Cyclone hosiery dryers.
5 Band folding and cutting machines.
1 48 spindle Payne Cop winder.
1 Hemphill Rib-cutter.
4 30-inch ventilating fans.

**WRITE FOR COMPLETE LIST.**

*APPRAISEMENTS A SPECIALTY.*

We are always in the market to buy good second-hand Knitting and Finishing Machinery.





# High Speed Rib Knitting Machinery.

Our latest model machinery has been designed to run at **very high speed**, giving large production. This is accomplished with fewer seconds, less breakage of needles, less jar and wear and tear on machines than has been customary at lower speeds.

We also make Special

## STRIPING AND DESIGNING MACHINES

for Fancy Golf Stockings, Bathing Suits, Sweaters, Toques, Toboggan Caps, Skirts, etc.

**Our Machinery gives large production at low cost and enables manufacturers to meet the market always and make a profit.**

## STAFFORD & HOLT,

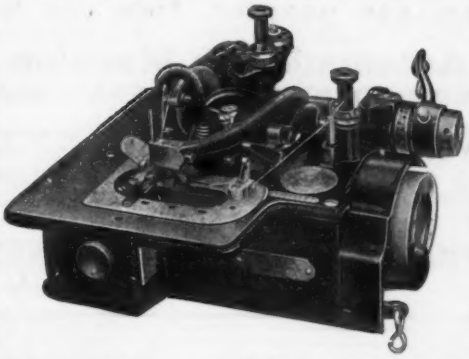
LITTLE FALLS, N. Y.

# "OVERLOCK" Machine

TRADE MARK. (Pat. April 5, 1892.)

*Patent twice upheld by U. S. Court of Appeals.*

For Trimming, Seaming (or Hemming or Overedging) and Covering Raw Edges of Knit Underwear and Hosiery in **ONE OPERATION,** and for making "Overlock" Corded Edge on Lace Curtains, Silks, Ribbons Etc.



*Extract from Report of U. S. Consul at Nottingham, Eng.*

"The Overlock stitching device of Willcox & Gibbs has had a phenomenal success since the date of its introduction * * * * The keen competition among manufacturers has necessitated its use, both as a matter of economy and to improve the character of output for a discriminating market."

TRADE MARK.

WILLCOX & GIBBS SEWING MACHINE CO. NEW YORK

Business Est. 1859.

**WILLCOX & GIBBS SEWING MACHINE COMPANY**

General Offices, 658 Broadway, cor Bond Street,

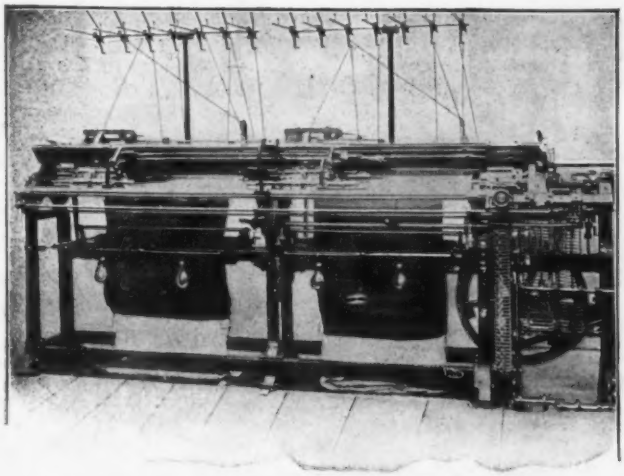
**NEW YORK, N. Y.**

Branches: LONDON PARIS MILAN DRESDEN

# The Grosser Knitting Machine Co.

**MAX NYDEGGER,**

**Wool Exchange Building,** Room 400, **260 W. Broadway, NEW YORK.**



Full Automatic, Power, Jacquard Noppen Machine, "GROSSER." Dependent and Independent Heads. Latest Improvements.

## Are You Interested in Power Machines?

Why don't you write for the new **"Grosser" Catalogue,** giving you any desirable information about **Full Automatic Flat Knitting Machines?**

Swatches and Samples of the latest Novelties in the Knit Goods line at your disposal.

**Large Stock in Hand Power Machines,** Needles, Parts and Supplies.

Prompt attention.

Best Construction; Selected Materials; Rapid Delivery.

**Power Machines** to be seen **in Operation.**

**Agency and show rooms, Phila., Frank Reichenbach, 728 N. 4th St.**

SMALL RIB MACHINES
CROCHET MACHINES

# NATIONAL

SHELL STITCH
MACHINES

**Spring Beard Needle Machine**
For SEAMLESS HOSIERY, Plain and Novelties

**Automatic Rib Machine**
For RIBBED UNDERWEAR. All Styles and Gauges

**Over Seam Machine** "Champion, Improved"
For Welting Seamless Hosiery. Covering Raw Edges of Rib Fabrics.

**NATIONAL AUTOMATIC KNITTER CO.**
SEND FOR FULL PARTICULARS
724-726-728 Cherry St., Philadelphia

**WOLFGANG RICHTER,**
Importer and Builder of
**Full Fashioned Knitting Machinery**
N. E. Corner Third and Green Streets,
PHILADELPHIA, PA.

*"The best is cheapest."*

**The Knitting Machines Made by**

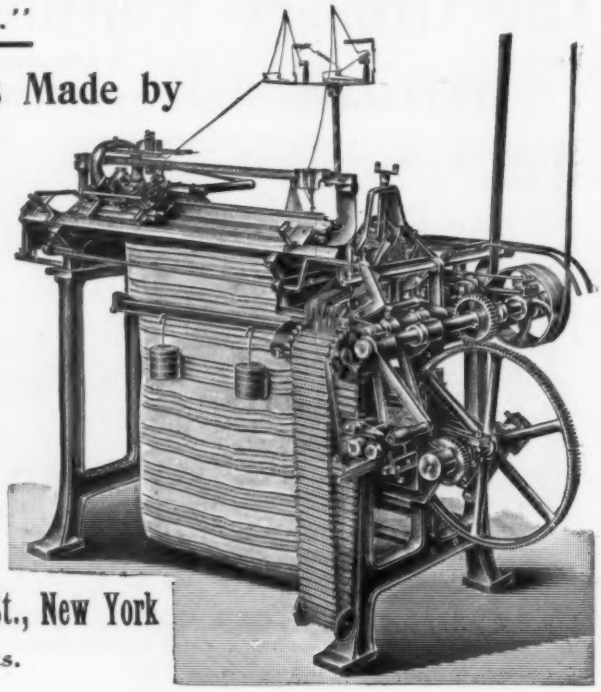
**WILHELM BACH,**

Apolda, Germany

are made of the highest grade tool steel, best constructed, and more durable than any other machines on the market for

Knitting Fancy Vests, Sweaters, Golf Jackets, etc.

*Fully Automatic Power Machines a Specialty.*



**D. Rheinauer & Co., 136 Greene St., New York**
American Selling Agents.

## PAXTON & O'NEILL'S

# 3-4 AUTOMATIC KNITTER

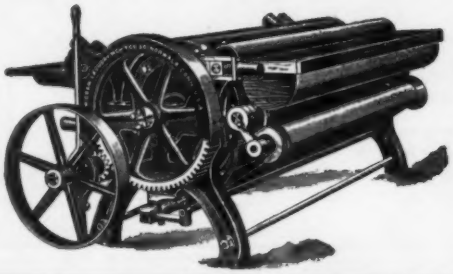
FOR ALL KINDS AND GUAGES OF SEAMLESS HOSIERY.

Has the preference wherever used over 7-8 and full automatics. Because it makes as much or more goods and better goods. Costs less for repairs. Gives less trouble to fixers. Range on Half Hose, from the coarsest to 200 needle.

Exclusive rights to BROWN'S ATTACHMENTS FOR LACE EFFECT.

Cylinders and Dials for all size Machines. **127 Bread Street, Phila.**

## AUTOMATIC IRONING and PRESSING MACHINE for KNIT GOODS.



This machine irons and presses ribbed and flat underwear, giving a fine, smooth finish and most attractive appearance to the goods, not to be obtained in any other way. It does not break buttons. Inexpensive and easy to operate, and has large capacity. Knitting mills using them are greatly pleased with results. This method of finishing is sure to come into universal use. Send for further particulars to

**J. W. CRAW LAUNDRY MACHINERY CO.,**
SOUTH NORWALK, CONN.

## HEPWORTH & CO.'S

Patent Single-Stitch

# LOOPING MACHINE.

Needle working from the inside, avoiding the breaking of needles and points and picking up the metal.

Single and Double Stitch, or Both Combined.

JOHN W. HEPWORTH & CO.,
*N. W. Cor. Lehigh Ave. and Mascher Street,*
PHILADELPHIA.

Drying Forms.

BOARDS FOR FAST BLACK DYERS.

HOSIERY FINISHING BOARDS.

BEST WORK. PROMPT SERVICE. PRICES ALWAYS RIGHT.

JOS T. PEARSON 1815-21 TAYLOR ST. KENSINGTON PHILA.

Hosiery Boards.

# EXCELSIOR KNITTING MACHINE MFG. CO.

BUILDERS OF

**Full Automatic Knitters**

WITH OR WITHOUT

**Transferring Device**

ALL SIZES AND GAUGES, 2 1-4 INCH TO 4 INCH

MEADOW AND WASHINGTON STREETS ALLENTOWN, PA.

# CHARLES COOPER,

BENNINGTON, VERMONT.

MANUFACTURER OF

# Knitting Machinery

Flat and Circular Rib, both Spring and Latch Needle, Plain Circular Machines, Lead or Trick Cylinder. **Spring Needle Cylinder Rib-Top Machines**, for making Cuffs, Drawer Bottoms and Shirt Borders. **Spring and Latch Knitting Needles, Burr Wheels, Burr Blades, Sinkers, Jacks, etc.**

## COLLARETTE ATTACHMENT

**European Representatives,**
**MOSES MELLOR & SONS, Ltd.**
**Nottingham, England.**

**C. J. SIBBALD, General Representative, 757 River St., Troy, N. Y.**

# Boss Knitting Machine Works,

READING, PENN.

BUILDERS OF THE

# NEW IMPROVED

## 15/16 Automatic Hosiery Knitting Machine.

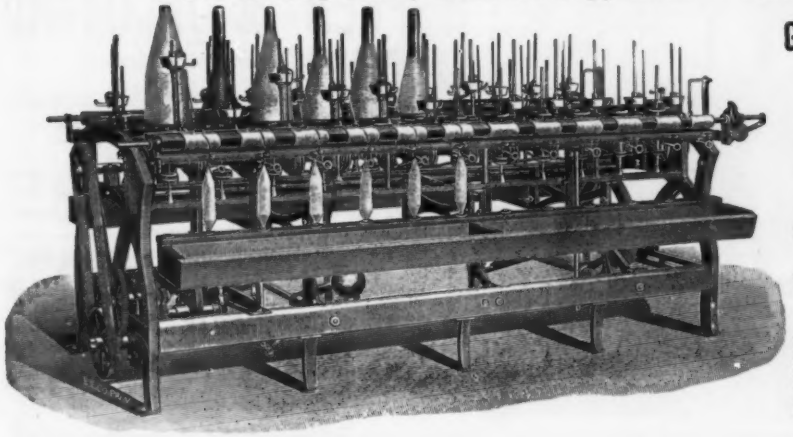
**WATCH THIS SPACE!**

Illustrated description will appear next month.

GEO. W. PAYNE, Prest. J. MILTON PAYNE, Treas. CLINTON F. PAYNE, Sec'y.

**OVER 1,650 PAYNE WINDERS IN USE**

For Hosiery Mfrs., Wind for Cop, Skein or Bobbin.



**GEO. W. PAYNE CO.,**

[Est. 1865. Inc. 1903.]

Builders of the

**Improved**

**Upright Spoolers,**

To Spool from Cop, Skein or Bobbin.

Doubling Spoolers, for doubling 2, 3, or more ends into one,

Upright Quillers, Quill from Cop, Skein or Bobbin.

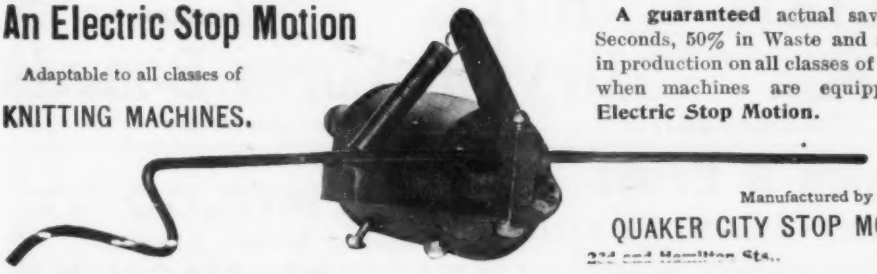
Ring Dresser, Spooler and Reel Spindles, Cop Skewers, Warp, Spool, Spooler, Guides, Bolsters and Stops Made and Repaired at Short Notice.

OFFICE, 102 BROAD STREET
Pawtucket, R. I.

**An Electric Stop Motion**

Adaptable to all classes of

KNITTING MACHINES.



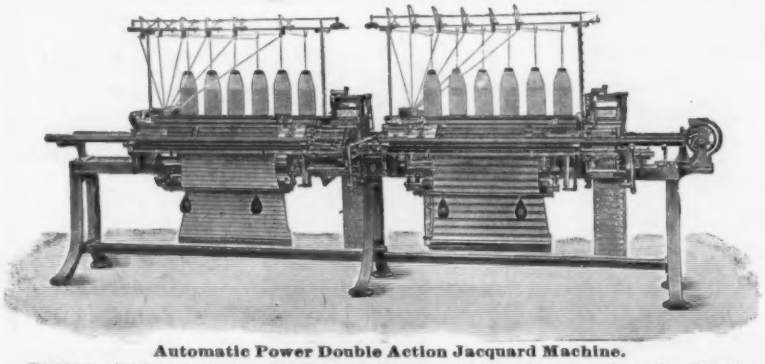
**A guaranteed** actual saving of 90% in Seconds, 50% in Waste and a 30% increase in production on all classes of Knitted Goods, when machines are equipped with this **Electric Stop Motion.**

Manufactured by

QUAKER CITY STOP MOTION CO.,

234 and Hamilton Sts., Philadelphia, Pa.

**SEYFERT & DONNER,** CHEMNITZ, GERMANY.



Builders of all kinds of

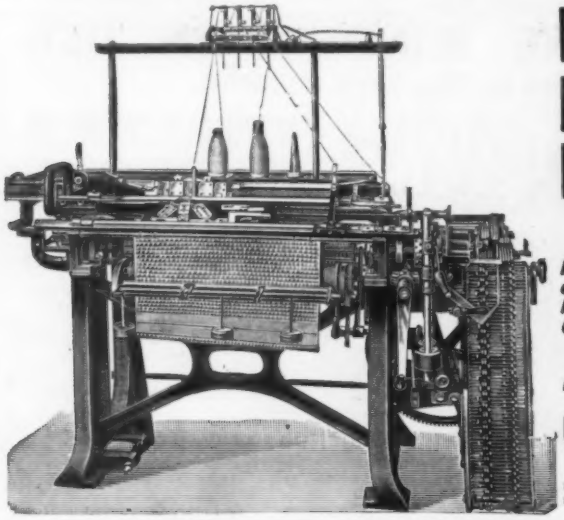
**Flat Knitting Machines**

(LATCH NEEDLES)

**Automatic Power Double Action Jacquard Machine.**

For the production of raised work and colored figures, dots, etc. These machines are built with one or two heads, which are entirely independent from another; for making vests, sweaters, blouses, cardigan jacket fronts, gloves, and all kinds of fancy goods The number of designs which can be made on this machine is practically unlimited; it is fitted with a double automatic carrier for striped or plated work, one automatic carrier for the separating thread, four self acting locks for 1 and 1 rib, and cardigan stitch, two Jacquard rollers, one of which can be automatically moved from 1-10 needles, automatic rack over 1-4 needles, dropping arrangement for making armholes, automatic stop motion and take-up, also brushes. The construction of the Jacquard mechanism is on the principle of a weaving loom, allowing patterns to be easily and cheaply made, and quickly exchanged.

**Sole Agent for the United States, JULIUS MULLER, 132 Melrose Street, Brooklyn, N. Y.**



# Full Automatic NOPPEN & JACQUARD MACHINE

*For High-Grade Sweaters, Jerseys, Etc. in latest plain and colored patterns.*

*Most durable, simplest construction! Easy to operate and adjust! Recognized as the Best in the market. One operator attends to 3 of these machines! Only reliable machine for above articles.*

HIGH SPEED! LARGE PRODUCTION! IN USE EVERYWHERE!

Ask for samples and full particulars. State gauge and size you need.

**CLAES & FLENTJE** Mühlhausen, Thür, GERMANY.

Representatives: Ainslie Knitting Machine Co., Ainslie and Humboldt Sts., Brooklyn, N.Y., where all kinds of hand and power machines can be seen working.

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# WILLIAM C. BULL, BENNINGTON, VERMONT.

MAKER OF

For Ladies', Gents', and Children's Goods.
LATEST STYLES.
BEST WORKMANSHIP.

## Drying Form Boards

OF EVERY VARIETY.

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## Stanton & Lewis

CENTRAL STEAM FORGE

316 and 318 Florist St.,

PHILADELPHIA .. .. PENN.

The best equipped shop in the United States for the Manufacture of

**Knitting Machine Cylinder**

and Sinker Bed Ring Forgings, from the smallest to 30 in. dia. of the best steel.

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## KNIT FABRICS CUT TO LENGTH.

### Our Knit Fabric Cutter

will cut from the roll, knit fabric into any length from 10″ to 40″ at the rate of 100 pieces a minute. The lengths are accurate, the waste is a minimum, the labor unskilled.

### We also make a Slitter

for cutting these goods into narrow strips and rewinding same into rolls.

**SAMUEL M. LANGSTON,**

Manufacturer of Paper Box Machinery.

812 Winter Street, Philadelphia, Pa.

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## CRANE MFG. CO. Lakeport, N. H.

Spring Needle Circular

## KNITTING MACHINE.

For Hosiery, Shirts, Drawers, Jersey Cloth and Stockinet.

A Specialty of Hardened Bladed Burr Wheels with Self-Oiling Brackets.

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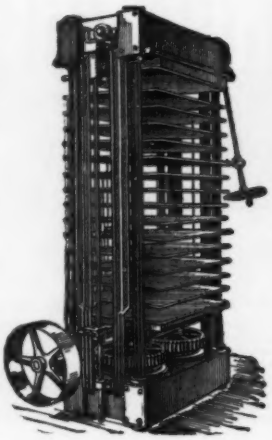


# Reliance Hot Plate Press

For Hosiery and Underwear Trade.

For price and particulars address

**CHARLES HART**

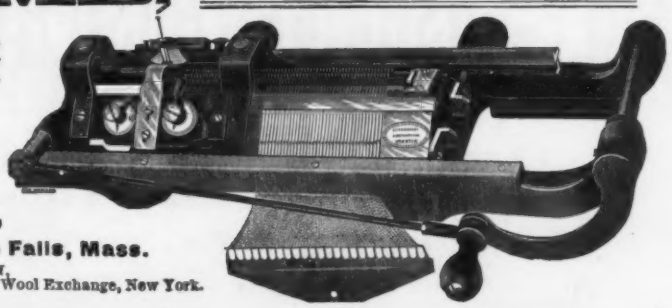
Hedge and Brown Sts., Frankford, Phila., Pa.

# The LAMB, LEADER OF KNITTERS,

**Original and Still the Best.**

Most widely used; being operated in every civilized country in the world. For description, prices, etc., see catalogue.

CIRCULAR MACHINES,
RIB TOP and
SEAMING MACHINES.



**LAMB KNITTING MACHINE COMPANY,**

**P. O. Box 5888, Chicopee Falls, Mass.**

J. E. WOODHEAD, 100 22d St., Chicago.
L. D. SANBORN, Room 505 Wool Exchange, New York.

PAT'D MORRIS TRADE MARK BASKET GROVEVILLE N.J.

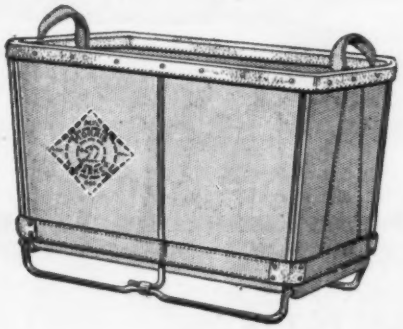
# Duck Mill Baskets

should form a part of your knitting mill equipment.

*It Pays Other Knitting Mills.*
*It Would Pay You.*

Baskets are made any size or shape.

Write today for Booklet No. 4 which tells all about these baskets.



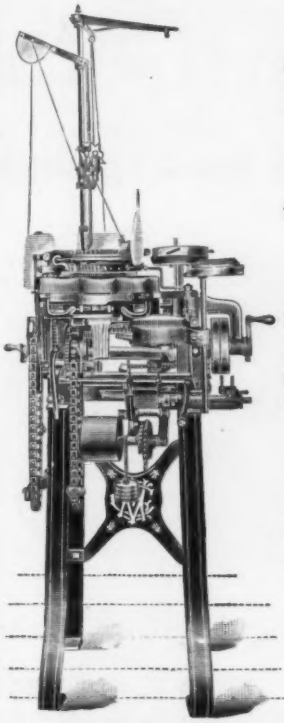
ADDRESS

Morris & Co., Dept. T, Groveville, N. J.

# We Know How

TO BUILD HOSIERY MACHINERY

# That's Why There Are More Standards



**in use than any other make.**

Have you seen the new Standard F?

It will produce from **30%** to **50%** more goods than any other machine on the market.

Hosiery manufacturers are invited to inspect it in our show rooms.

ARE YOU INTERESTED?

**STANDARD MACHINE CO.,**
**508 Ludlow Street,**
**Philadelphia.**

# FULL-FASHIONED HOSIERY MACHINERY

.. BUILT BY ..

## Chemnitzer Wirkwaaren-Maschinenfabrik

(Formerly SCHUBERT & SALZER)

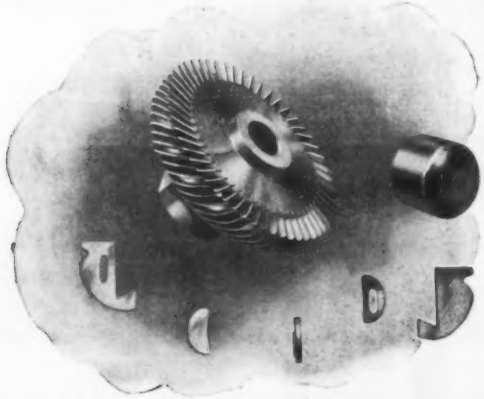
CHEMNITZ, GERMANY.

HALF-HOSE LEGGER OF 24 SECTIONS.

All classes of flat work machines for full-fashioned hosiery in all gauges, from 21, 24, 27 up to 51 guage, from 12-24 sections, also machines for full-fashioned shirts and pants in all guages from 6-10 sections, with narrowing and widening.

Representative: OTTO WALTHER, 591 Bourse, PHILADELPHIA

## TOMPKINS LATEST IMPROVED Backing Burr



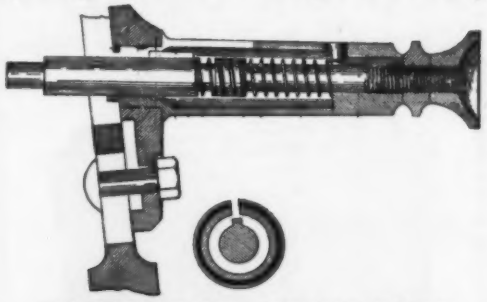
Tompkins Bros. Co., Troy, N. Y.
Circular Spring Needle Knitting Machinery.

## ROBERT W. CORMLY & CO.

TROY, N. Y.

—BUILDERS OF—

## Spring Needle Knitting Machinery



PATENT BURR STAND TUBE

The cheapest and best on the market with more and simpler adjustment than any other make.

## WILFRED WELLS,

Sole Manufacturer of the

## CHAMPION HOSIERY STAMP.

PATENTED JANUARY 7, 1896.

The Only Perfect Stamp for Hosiery, Underwear and all Woven Fabrics. BLOCKS FOR PRINTING HOSIERY.

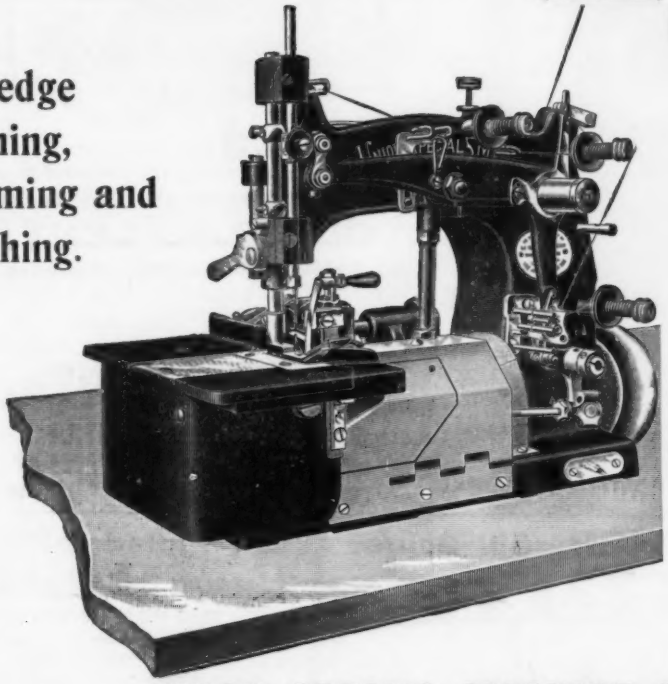
505 W. Lehigh Avenue, . . . PHILADELPHIA, PA.

High Speed and Most Durable Mechanism are the Essential Elements of Machines to Produce Sewed Articles. We have these Elements in the

# New Union Special Single "Interlock" Machine

(Trade Mark)

For Overedge Seaming, Hemming and Finishing.



High Speed Class 15400.

Two or Three Thread Stitch.

Simplicity.

Durability.

**UNION SPECIAL MACHINE CO.**

75 E. Kinzie Street, Chicago.
731 Arch Street, Philadelphia.
9 Andrews Street, Rochester, N. Y.
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47 Leonard Street, New York.
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714 Main Street, Cincinnati.
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**A. McMICHAEL,**

*Machinist,*

Repairs to Hosiery and Underwear Machines, Cylinders and Dials of every description.

**FINE MACHINE WORK.**

22 Armat Street, near Main, Germantown,

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We HARDEN all CYLINDERS and DIALS large and small.

**Hegeman Seamless Bobbin Cover.**

The best, cheapest and most satisfactory covering for winder bobbins. Will fit on any style or size.

FRANK E. KOLB,
*MILL SUPPLIES*
Amsterdam, N. Y.
SOLE AGENT FOR
Adams' Patented Latch Needles

Standard of Excellence

STEPHENSON BEST BAR BEST BELT DRESSING

PRESERVES BELTS — PREVENTS SLIPPING

Sole by progressive dealers or by

STEPHENSON MFG. CO.

ALBANY, N. Y.

G. Bickelhaupt Skylight Works

Sole Manufacturers of

G. B. TRADE MARK SPECIALTIES.

SELF-LOCKING SCUTTLE OPENER.

*Skylight Lift and Skylights.*

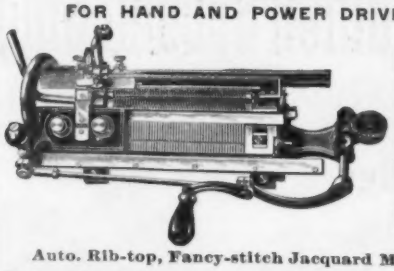
Established 1869. Send for pamphlets.

243-245 N. 47th Street, - NEW YORK.

Best Knitting Machines

IMPROVED CONSTRUCTION

FOR HAND AND POWER DRIVING.



High Speed, Excellent Work-manship.

Auto. Rib-top, Fancy-stitch Jacquard Machines.

Everywhere in work. 80,000 Machines sold.

CLAES & FLENTJE,

Mühlhausen, Thür, Germany.

Agents for the East: Ainslie Knitting Machine Co., Ainslie and Humboldt Sts., Brooklyn, N. Y.

Agents for the West: Logan Knitting Factory, Logan, Utah.

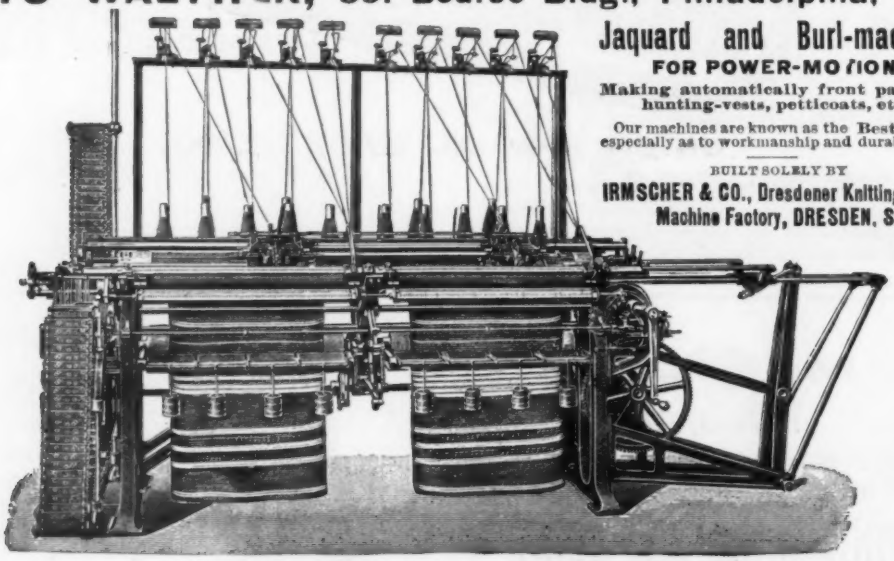
LEWIS JONES,

60½ and Media Streets, . . . PHILADELPHIA.

GAS ENGINES for city or country
BRUSHING MACHINERY
KNITTING MACHINERY

} EFFICIENT DURABLE LOW IN PRICE

OTTO WALTHER, 591 Bourse Bldg., Philadelphia, Pa.



Jaquard and Burl-machine

FOR POWER-MOTION

Making automatically front parts of hunting-vests, petticoats, etc.

Our machines are known as the Best Built especially as to workmanship and durability.

BUILT SOLELY BY

IRMSCHER & CO., Dresdener Knitting Machine Factory, DRESDEN, SAXONY

SWEATERS.—This machine is built with 1 or two sections which work together (dependently of each-other) and produces all patterns which could be made hitherto on Hand-Jaquard- and Burl-machines automatically in endless pieces with dividing thread. We are ready to wait on with collection of same which will be the best recommendation, and here we will mention but to following advantage of this machine which is constructed very geniously: It is provided with autom. racking-apparatus as far as 6 needles, special cams for double rib, autom. change of all middle and wing-cams, 2 thread-carriers, autom. change of colors, special attachment for locking in the loops and electric stop-motion in case of yarn-breaking, knots, etc.

All these apparatus are set to work by the pattern-chain, consisting of a number of Jaquard-cards. This new arrangement which is our invention enables the knitter to put together any pattern, making the necessary cards by means of a stamp and after a table we subjoin.

Special Hand and Power Machinery for Fancy Gloves, Sweaters, Golf Hose, Ladies' Blouses, Etc.

**WM. COREY CO.,**
Manufacturers of Knitting Machine
**Latch Needles,**
MANCHESTER, N. H.

**EXCELSIOR NEEDLES.**
The best Hosiery Needles in the market.
Manufactured by
WARDWELL NEEDLE CO., Lakeport, N. H.

**W.M. BREEDON'S SON,**
MANUFACTURERS OF
**Spring Knitting Needles**
AND BURR BLADES OF ALL KINDS.
AMSTERDAM, - N. Y.

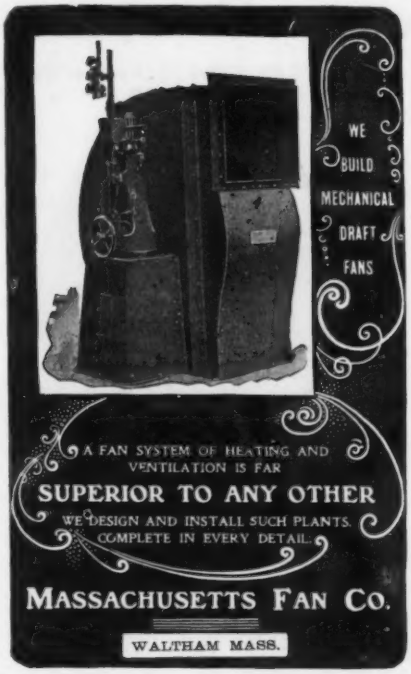
**ORION TREAT,**
MANUFACTURER OF
Screw Riveted Balmoral and Double Rib
**NEEDLES**
(Patented May 6, 1890.)
*All Work Guaranteed.* MANCHESTER GREEN, CONN.

**L. T. IVES CO.**
Manufacturers of all kinds of
**SPRING KNITTING NEEDLES**
NEW BRUNSWICK, N. J.

**PAGE NEEDLE CO.,**
MANUFACTURERS OF
**LATCH NEEDLES**
of all kinds. Warranted in every respect.
CHICOPEE FALLS, MASS.
Agents: J. E. Woodhead, 100 Twenty-second Street, Chicago, Ill. Durbrow & Hearne Mfg. Co., 12 Wooster Street, New York. James Taylor, 835 Arch Street, Philadelphia, Pa.

**Manufacturers' Supplies Co.**
418 ARCH STREET, PHILA.
Needles and Supplies for Knitting Mills.
Agents for EXCELSIOR NEEDLE CO., and NATIONAL NEEDLE CO.

**EDWIN A. NEWTON,**
KNITTING MILL MACHINERY AND SUPPLIES,
NEW AND SECOND HAND.
Exclusive Agent for the Hemphill Full Automatic Knitters.
245 Race St., Philadelphia, Pa.
Expert Appraisals on Machinery.


WE BUILD MECHANICAL DRAFT FANS
A FAN SYSTEM OF HEATING AND VENTILATION IS FAR
SUPERIOR TO ANY OTHER
WE DESIGN AND INSTALL SUCH PLANTS COMPLETE IN EVERY DETAIL
MASSACHUSETTS FAN CO.
WALTHAM MASS.

**$ 50,000.00 Subscribed**

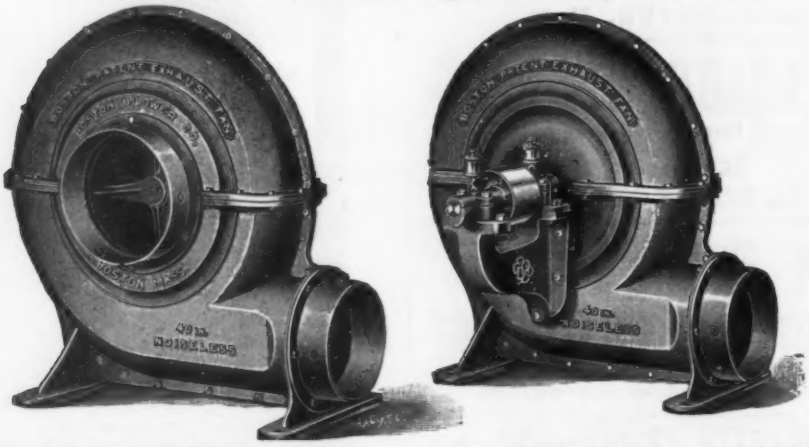
*SITE DONATED*

and the citizens of one of the best communities on our line are making determined efforts to locate a cotton mill and knitting mill.
They want to get in touch with a brainy, experienced operator, who can subscribe some stock and assume active management of the plant.
The immediate section produces cotton of the finest staple; the farmers themselves have subscribed stock and are interested in the success of the venture. Cheap fuel, intelligent white labor, low rates on the finished product, are some of the attractive features.
For additional information address
*J. W. WHITE,*
General Industrial Agent, Portsmouth, Va.

SEABOARD AIR LINE RAILWAY
If you want to move your plant South write us.

# Boston Wool Exhausters, with Removable Tops.

**As used in Connection with Pneumatic Conveyer System for Handling Wool, Cotton, Rags, Excelsior, Jute, etc.**



**Inlet Side of Right-hand Wool Exhauster.** **Pulley Side of Left-hand Wool Exhauster.**

This machine is similar in design to the regular Boston Patent Exhaust Fan, but is fitted with a special wheel for handling fibrous materials, and the top is removable.

This latter feature is especially desirable when handling wet or greasy materials or in handling anything, in fact, which would leave a deposit on the inside of fan, as the entire top may readily be removed for inspection or cleaning without disconnecting either pipe or belt connections.

**BOSTON BLOWER CO.,** Main Office and Works: **Business and Glenwood Sts., HYDE PARK, MASS.**

---

# Reels for Cotton

**WOOLEN AND WORSTED**

Patented Hosiery Winders, Cop Winders and Spoolers.

**LINDSAY, HYDE & CO.,**

2124 to 2130 East York St., PHILADELPHIA, PA.

---

**CHARLES H. SCHNITZLER,**

Patentee and Sole Manufacturer of

**THE PNEUMATIC CONVEYOR**

For the handling of wool and cotton stock, rags, excelsior, jute and all kinds of fibrous material, wet or dry. Also spool elevators, steam heating and ventilating, and mill work generally. Blower and fan work a specialty. This conveyor is patented. Beware of infringement.

SATISFACTION GUARANTEED. Patented Oct. 15, 1889.

215 NORTH SECOND ST., - PHILADELPHIA, PA.

---

# Water Wheel Governors

**For TEXTILE MILLS**

We Guarantee Satisfaction.

**Replogle Governor Works**

Write for Catalogue T. **AKRON, OHIO.**

---

ARE YOU IN NEED OF **CUTS**

IF SO, NOTIFY—

**Smith Bros.**

WOOD, ZINC & HALF-TONE ENGRAVING.

KNITTING MACHINERY & ALL KIND OF MECHANICAL WORK OUR SPECIALITY.

119 S. 4th Street PHILADELPHIA, PA.

---

# SAMSON TURBINE

To insure close speed regulation in a turbine it is necessary to have a gate which is easily operated. The gates on our

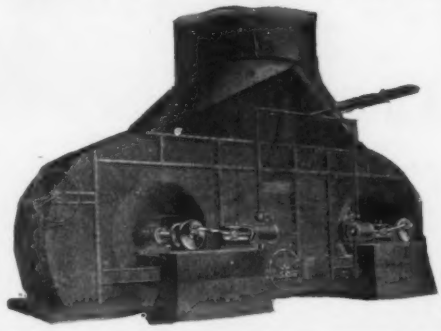
**SAMSON TURBINES**

are balanced and consequently moved with the greatest ease.

Write Department A-5 for Catalogue.

**The James Leffel & Co.,** SPRINGFIELD, OHIO, U. S. A.

## The "A B C" System of Mechanical Draft

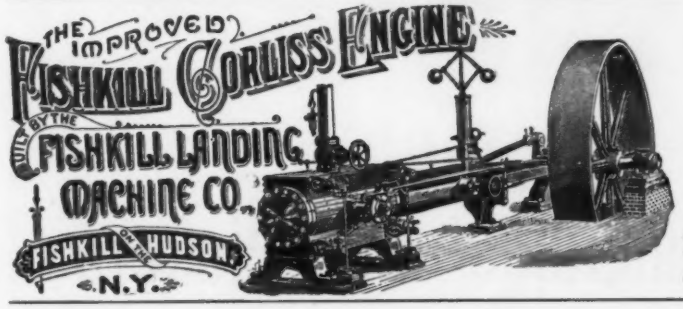


Increases the steaming capacity of boilers.
Makes possible the use of cheap fuel.
Insures positive draft under all weather conditions.

SEND FOR CATALOGUE No. 118.

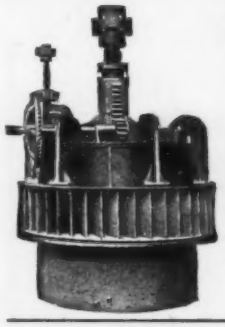
Fans and Blowers for all Purposes.

American Blower Co., Detroit.




Most Efficient and Economical Power in the world For Textile Mills.

It has NO EQUAL for Close Regulation and Noiseless Operation. Send for Catalogue.



## Risdon=Alcott Turbine Co.

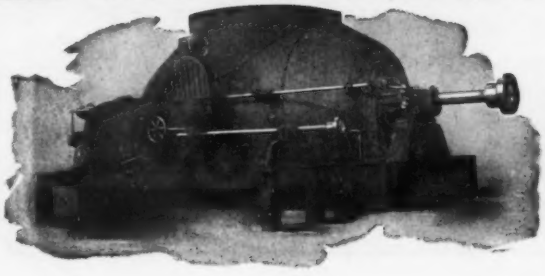
MOUNT HOLLY, NEW JERSEY, U. S. A.

RISDON CELEBRATED TURBINE
ALCOTT HIGH DUTY TURBINE

**On Horizontal or Vertical Shafts.**

These Turbines are recognized as the most effective water wheels made. Your inquiries should come direct to us for this class of machinery.

## PAIR McCORMICK TURBINES



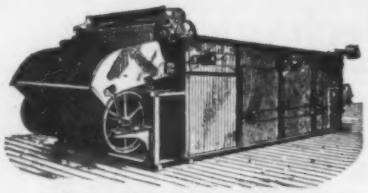
**4,000 H.P., 72 ft. head, arranged to drive generator and a single turbine to drive exciter. Five settings built for the Hudson River Water Power Company's Spier Falls plant and 14 pairs 51 inch for their plant at Mechanicsville, N, Y.**

*Write for Catalogue if contemplating purchase of turbines.*

**S. MORGAN SMITH CO.**
**YORK, PA.**
**Boston Office, 176 Federal Street.**

DEC 15 1904



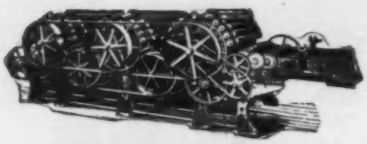



Automatic Cotton Stock Dryer.

Automatic Yarn Dryer.

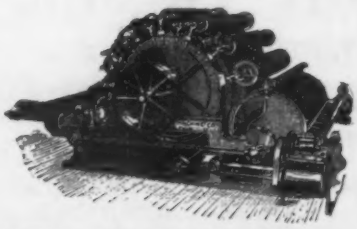
# "CYCLONE" DRYERS

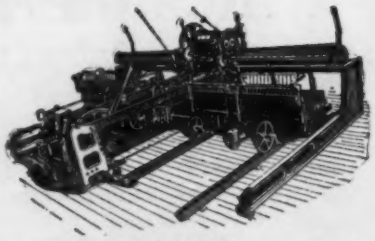
For Cotton Stock, Wool Stock, Rags,
Yarn, Cloth, Underwear, Stockings, Etc.



# "PROCTOR"
# Garnett Machines and Pickers

For reducing to fibre Cotton and Woolen
Waste, Cloth Clippings, Etc.





# "FURBUSH" Woolen Mill Machinery

Including Pickers, Cards, Mules, Twisters,
Warpers, Dressers, Spoolers, Etc.

Manufactured by

## THE PHILADELPHIA TEXTILE MACHINERY CO.,

**Hancock and Somerset Sts., - PHILADELPHIA, PA.**

# Talks to Textile Manufacturers

## CHAPTER X

## THE HOSIERY MANUFACTURER

### Who DOESN'T Advertise And The ONES Who DO

will be equally interested in these few words. They are addressed particularly to the one whom you know who doesn't advertise!

During the past twelve months The Butterick Trio has carried the advertisements of the following brands of hosiery:

FAY STOCKING COMPANY
HOLE PROOF HOSIERY COMPANY
YORK KNITTING MILLS
YALE MILLS
CHICAGO KENOSHA HOSIERY COMPANY
BUSTER BROWN STOCKING COMPANY
BURSON KNITTING COMPANY
BROWN, DURRELL COMPANY
LORD & TAYLOR
N. B. LAUBACH
SHAW STOCKING COMPANY

There is a story of success connected with every one of them, but this success has differed in degree according to the knowledge and power of the advertising which promoted it.

We have sold to one hosiery manufacturer for the coming year $30,180 in advertising space in the Butterick Trio—by many times the largest order for hosiery advertising ever placed in the world.

How can this manufacturer afford to do it?

That's where the "knowledge and power" comes in. He has the knowledge left over from his last season's experience—much of which we gave him. He didn't have it at the beginning of last season, but he had faith—faith in the Butterick method and in the Butterick magazines. He figured it out, this year, without urging from us, and to his knowledge he now adds the power of larger space and stronger argument consistently placed before the great multitude of Trio readers.

We showed him how and he made money by it.

We know better how to help you this year, than we did how to help him last year.

All we know is yours, if you ask us.

It is not a complicated affair any longer, and is less of theory now than of following in the path of proved success.

***I would like to mail every hosiery manufacturer a map of this success country with the sure road clearly marked***

**THOMAS BALMER, Advertising Manager**

**The Butterick Trio**

THE DELINEATOR—THE DESIGNER—NEW IDEA WOMAN'S MAGAZINE

**Butterick Building** **NEW YORK**

# THE NEW FOSTER CONE

Open wind from start to finish of cone.
No press-offs from knots, overwinds, etc.
The only perfect system of winding yarn
for knitting purposes.

OVER 30,000 SPINDLES IN USE IN THE U. S.

**FOSTER MACHINE CO.,**

*WESTFIELD, MASS.*

## Buffalo Fan System

OF HEATING, VENTILATING, DRYING
AND HUMIDITY CONTROL.

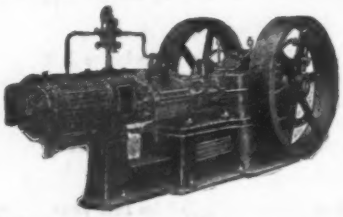
*Used by America's Foremost Textile Mills.*

Economical—Efficient—Reliable.

## Buffalo Engines

FOR ELECTRIC LIGHT AND POWER SERVICE.

High Speed

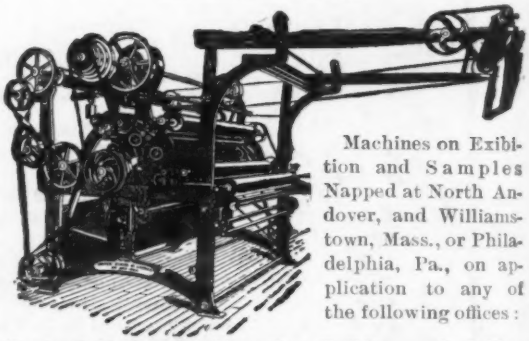


High Grade

**Buffalo Forge Co., Buffalo, N.Y.**

## THE AMERICAN NAPPING MACHINE CO.

Own the principal patents on Napping Machines, representing the latest French, English and American Patents.



Machines on Exibition and Samples Napped at North Andover, and Williamstown, Mass., or Philadelphia, Pa., on application to any of the following offices:

Davis & Furber Machine Co., Builders and Selling Agents, North Andover, Mass.
Geo. S. Harwood & Son, 53 State St., Boston.
C. J. Jones, Salesman, No. 160 West Lehigh Avenue, Philadelphia, Pa.

**H. H. HEAP,** Treasurer and General Manager.
WILLIAMSTOWN, MASS.

## Walworth Manufacturing Co.,

HIGH PRESSURE

# VALVES AND FITTINGS

"Walmanco" Pipe Flanges,
"Never Stick" Blow-off Cocks, Mill Supplies.

GENERAL OFFICES:

**132 FEDERAL STREET, BOSTON, MASS.**

New York Office: Park Row Building.